

DEPARTMENT OF HEALTH AND HUMAN SERVICES

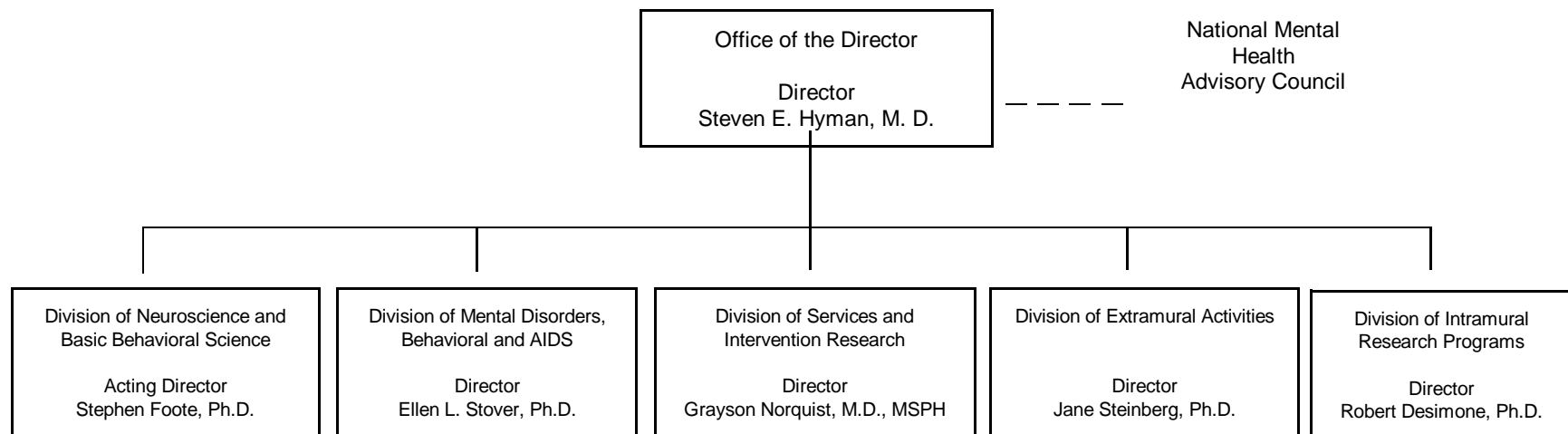
NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

**National Institutes of Health
National Institute of Mental Health**



NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

For carrying out section 301 and title IV of the Public Health Service Act with respect to mental health, [\$978,360,000] *\$896,059,000*.

[(Department of Labor, Health and Human Services, Education and Related Agencies
Appropriations Act, as enacted by section 1000 (a) (4) of the Consolidated Appropriations Act,
2000, P.L. 106-113)]

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health

Amounts Available for Obligation 1/

Source of Funding	1999 Actual	2000 Estimate	2001 Estimate
Appropriation	\$861,208,000	\$978,360,000	\$896,059,000
Enacted Rescission	(\$570,000)	(\$5,214,000)	
Subtotal, Adjusted Appropriation	860,638,000	973,146,000	896,059,000
Real transfer to: Other NIH Institutes through the NIH Director's one percent transfer authority	(1,844,000)	—	—
Other HHS Agencies through Secretary's one percent transfer authority	(274,000)	—	—
Comparative transfer to: Other NIH Institutes as a result of a change in assessment formula for Clinical Center funding	(5,724,000)	—	—
Other NIH Institutes as a result of a change in assessment formula for Central Services funding	1,388,000	1,527,000	
Office of AIDS Research, NIH for HIV activities	(114,105,000)	(128,697,000)	—
Subtotal, adjusted budget authority	740,079,000	845,976,000	896,059,000
Unobligated balance, lapsing	—	—	
Total obligations	740,079,000	845,976,000	896,059,000

1/ Excludes the following amounts for reimbursable activities carried out by this account: FY 1999 - \$3,756,000; FY 2000 - \$6,000,000; FY 2001 - \$6,239,000

Excludes funding for HIV activities included in the Office of AIDS Research:
FY 2001 - \$135,294,000

Excludes \$493,784 in FY 1999 and \$530,324 in FY 2000 for royalties.

Justification

National Institute of Mental Health

Authorizing Legislation: Section 301 and Title IV of the Public Health Service Act, as amended. Reauthorizing legislation will be submitted.

Budget Authority:

FY 1999 Actual		FY 2000 Estimate		FY 2001 Estimate		Increase or Decrease	
FTE	BA	FTE	BA	FTE	BA	FTE	BA
731	\$740,079,000	819	\$845,976,000	819	\$896,059,000	---	+\$50,083,000

This document provides justification for FY 2001 Non-AIDS activities of the National Institute of Mental Health (NIMH). Justification of NIH-wide FY 2001 AIDS activities can be found in the NIH section entitled, "Office of AIDS Research (OAR)."

NIMH DIRECTOR'S STATEMENT

The yield of research on the brain and mind is an impressive capstone to this century's accomplishments in scientific medicine. As a wealth of new information accumulates, efforts are accelerating to translate this knowledge into more effective treatments and preventive interventions for mental and behavioral disorders. In 1999, the pace of progress – and the need to exploit continued advances to the benefit of the Nation's public health – prompted several unprecedented initiatives:

- At a first-of-its-kind White House Conference on Mental Health, the President, the Vice President, the First Lady, and Mrs. Tipper Gore met with citizens from around the country to spotlight the import and urgency of the Nation's mental health needs. Specific conference goals were to educate the public about mental health research and service priorities and to enlist public assistance in abolishing the stigma attached to mental disorders.
- The U.S. Surgeon General issued the first-ever Surgeon General's Report on Mental Health. On the strength of conclusions that mental disorders are real illnesses that impose an immense burden of disability on Americans across the lifespan, and that treatments of well-established efficacy exist, Dr. David Satcher urged Americans who are experiencing mental health problems or who fear they may have a mental disorder to seek help.
- The Department's budget includes an initiative for mental health that focuses department-wide resources on program and policy needs shared by Americans with, and at risk for, mental disorders. Initiatives slated for funding include new emphases of research on the causes, treatment, and prevention of mental illnesses, strategies to make accessible and affordable, essential mental health services, and new programs targeted to such public health crises as mental illness among homeless people.

- In another mental health “first,” the Department’s *Healthy People 2010* objectives designate mental health as one (of ten) “leading health indicators” for the Nation. Because these are a smaller, more focused subset of more than 450 measures contained in *Healthy People 2010*, leading health indicator status ensures that mental illness will serve as a high-profile benchmark for state, local, and federal agencies to use in assessing the progress of health initiatives. Importantly, given current requirements for data collection, the full array of the new health objectives will direct attention at every level of governance to health disparities, particularly as experienced by racial and ethnic minority group members.
- The Surgeon General established suicide prevention as a priority of his office and of the public health agenda. Suicide is a prominent cause of premature and preventable death, particularly for adolescents and young adults, and for older males. The vast majority of suicides are attributed to unrecognized and untreated clinical depression.

This remarkable public focus on mental disorders and mental health is an outgrowth of stunning progress in research that is generating a wealth of information about how the healthy brain works and develops from birth through old age, and how brain functions go awry in mental illness. The NIMH – a world leader in the support and conduct of neuroscience and behavioral research – holds lead Federal responsibility for focusing the power of these and other disciplines to reduce the public health burden of mental disorders and to determine how best to improve mental health in the United States.

The burden of mental illnesses on health and productivity in the U.S. and throughout the world is underscored in the landmark Global Burden of Disease study, commissioned in the mid-1990s by the World Health Organization and the World Bank. This report shows that major depression is the *leading* cause of disability among persons five and older in developed nations. Schizophrenia, manic-depressive (or bipolar) illness, and obsessive compulsive disorder rank among the ten leading causes of disability.¹ In the U.S. at any given time, the most severe forms of mental illnesses are disabling nearly 5 million adults, many for protracted periods of time. An estimated one in five Americans will experience at some point during their lives other less incapacitating mental disorders that nonetheless warrant – and benefit from – treatment.²

There are marked disparities in the frequency of occurrence and impact of mental illnesses across the lifespan and between men and women, factors that NIMH takes into account in planning and supporting research. For example, some 10-12% of children and adolescents in the U.S. suffer mental and behavioral conditions that interfere, to varying extents, with normal development and, all too often, compromise an individual’s health and functioning throughout their lifetimes.³ Autism and other pervasive developmental disorders, as well as conditions such as Attention Deficit/Hyperactivity Disorder, or ADHD, cause immense pain and suffering for affected individuals and their families.

Of similarly urgent concern are the mental health problems of older adults. Of the 32 million Americans age 65 and older, about 4 million suffer from dementias, such as Alzheimer’s disease⁴, and nearly 5 million suffer from depression, which can, and all too often does, lead to suicide. In fact, elderly people have the highest suicide rates, and the trend is upward. While multiple forms of mental and behavioral disorders can occur in late life, they are not an inevitable

¹ Murray CL, Lopez AD, Eds. The global burden of disease. World Health Organization, World Bank, Harvard University, 1996.

² Disease-specific estimates of direct and indirect costs of illness and NIH support. Report to Congress, 1997 Update. Appendix: Mental disorders. (DHHS, NIH. April, 1997.)

³ U.S. Dept. Health and Human Services. Mental Health: A report of the Surgeon General. Rockville, MD: DHHS, SAMHSA, CMHS, NIH, NIMH, p. 124, 167. 1999. Washington, DC, GPO.

⁴ Report of the Advisory Panel on Alzheimer’s disease, 1989. DHHS Publication No. (ADM) 89-1644.

part of the aging process. Many of these conditions are treatable, even when often complicated by age-related changes in cognitive functioning.

Women are more likely than men to be affected by certain mental disorders, such as major depression and dysthymia (a less severe but often more chronic form of depression). For example, an estimated 6% of U.S. women, in contrast to 3% of men, will experience a major depression during their lifetime, and almost as many women will have dysthymia⁵. Anxiety disorders affect approximately twice as many women as men⁶ and eating disorders disproportionately affect females, occurring in about 3% of young women⁷.

The public health mission of NIMH demands research that attends to the manifestations and impact of mental disorders in the population. Public health also connotes epidemiologic surveillance of the mental health of the population at large, health promotion, disease prevention, and access to and evaluation of services. The foundation for all of these activities is a solid understanding of the orchestrating role of the brain in health and illness and of the ways in which the brain influences and is influenced by behavior.

The Brain in Mental Health and Illness

As we learn how the healthy brain works, we are gaining priceless knowledge of the myriad biological mechanisms that can impair brain health and cause mental illness. Modern neuroscience has provided researchers with tools to unlock many secrets of how the brain carries out its vital cognitive functions such as learning, memory, attention, and emotion and how these functions change in mental illness or when an ill person is treated. We are beginning to discern the complex relationships between the brain's actions and the individual's behavior and how the brain both influences behavior and, in turn, is influenced by behavior. Science today permits the investigation of behavior not only in contexts that we normally understand it to occur – that is, in individual and group processes in both humans and animals – but also at the cellular and molecular levels within the brain.

The Science Advances described here afford glimpses of how disciplines such as molecular genetics are enriching our understanding of brain plasticity, which bears directly on the practicality of efforts to treat more effectively, as well as to cure and prevent, disabilities associated with severe mental illnesses and degenerative brain disorders.

Science Advances

Mouse Memory Gene Offers Clue To Human Learning and Memory. Manipulating a gene that plays a role in the chemical processes involved in memory formation in mice offers insight into the link between genes and “intelligence” in humans. Investigators inserted into a mouse embryo extra copies of a gene that codes instructions for a particular neurotransmitter receptor, the NMDA (N-methyl-D-aspartate) receptor. A receptor is the molecular docking point for the chemical messengers, or neurotransmitters, that convey information among brain cells. In addition to enhancing the action of the neurotransmitter, glutamate, on the NMDA receptor, the alteration of the gene produced a form of the receptor that is normally found in young mice, but not adult animals. This aspect of the gene alteration is of interest because learning abilities decline in many animals as they age. The “young” form of the receptor appears to allow a

⁵ Robins LN, Regier DA. Psychiatric disorders in America. Free Press, NY. 1991.

⁶ Regier DA et al. One-month prevalence of mental disorders in the United States. Arch Gen Psychiatry, 45:977-986. 1988.

⁷ U.S. Dept. Health and Human Services. Mental Health: A report of the Surgeon General. Rockville, MD: DHHS, SAMHSA, CMHS, NIH, NIMH, p. 124, 167. 1999.

slightly longer time interval for the animal to make an association between two events – hence, to learn a connection between the events. These mice learned faster, remembered more, and were better able to apply what they learned than their litter mates who had not received the altered gene. The scientists named the mice carrying this gene “Doogie,” after the TV show “Doogie Howser, M.D.,” about an exceptionally bright young man. Since the receptor gene the scientists studied is very similar to the same gene in human brains, it now appears that changing a gene to improve human learning abilities might someday be possible. While this insight is still an early development in the biological study of intelligence, it is encouraging news in the fight against age-related memory loss, senility, and Alzheimer’s Disease.

New Brain Cells Formed In Response To Learning. Conventional scientific wisdom long has held that persons are born with a set number of brain cells and that as these cells die off in later adult life, problems such as memory loss and senility are inevitable. Absent a means to actually observe brain cells over time, there was no way to confirm or deny this idea. Now, NIMH-supported scientists have focused on a part of the brain known as the hippocampus, an area associated with learning and memory. In rats, hippocampal cells were tagged, and the animals trained to navigate in spaces that were new to them, and to associate disconnected events. After the training period, the researchers observed a dramatic increase in the number of neurons in the hippocampus as well as other brain regions, an increase that persisted for more than a week after the training sessions ended. Evidently, neurons are born in response to the challenge of new learning and live longer when learning is taking place. In other words, learning, practicing, and remembering are all activities that seem to be linked not only to the development of new neurons, but with keeping those new cells healthy, functional, and living longer.

Neural Activity Shapes the Brain’s Cells. Adult brain cells (neurons) come in an enormous variety of shapes. Many cells have long, thin and branching extensions (dendrites) reaching out from the cell body to communicate with other neurons, and scientists have suspected that a neuron’s branching pattern must be important to the cell’s normal functional role. NIMH-supported researchers have shown that the neural activity may play a profound role in shaping dendrites during brain development. Using cultured rat brain tissue, the researchers labeled a small number of neurons, from a region of the brain known as the hippocampus, with a protein dye. When the scientists induced synaptic activity at selected sites on the neurons by stimulating receptors for a specific neurotransmitter, changes in the shape of the dendrites were observed by time-lapse two-photon laser scanning microscopy. The stimulation of one class of neurotransmitter receptors (*N*-methyl-D-aspartate, or NMDA, receptors) enhanced the growth of thin, thread-like extensions close to the stimulating electrode and these structural changes were long lasting. A second team of researchers demonstrated the growth of similar spine-like structures on the surfaces of hippocampal neurons taken from slightly older animals. The new extensions appeared shortly after brief, repeated stimulations of the neurons induced long-term potentiation, or LTP; this term, which describes long lasting enhancement of functional connections as a result of synaptic activity, offers a model for the brain’s plasticity, or changeability. Together, these findings indicate that neuronal activation within the living brain through NMDA receptors could initiate rapid, input-specific changes in the structure of neurons. Such changes are likely to play important roles in the birth of new connections between neurons and also in more subtle rearrangements of existing connections. The findings have fundamental implications for how, at the cellular level, on-going neuronal activity helps shape the brain’s architecture, and hence, its function. These structural changes may also be involved in important changes in brain cell function that occur during development, such as learning.

To Sleep, Perchance, To Have a Memory Workout. Research with birds has strongly endorsed a long-held hypothesis that one function of sleep is to strengthen some memories. NIMH-supported investigators devised a way to study birds while they slept, and found that during sleep the brain circuits responsible for their daytime song get re-wired and strengthened. Even though the sleeping birds do not hear their song while they slumber, the song circuits repeat

the same patterns experienced during wakefulness – a kind of unconscious practice to fine tune the neurons for the job ahead the next day.

How the Brain Pays Attention. The capacity of the brain to focus attention while a student crams for a final exam in a noisy dorm or to spot a friend's face – or an attractive stranger – in a crowd while filtering out other faces is a skill we tend to take for granted. But are the attentional processing mechanisms that account for such automatic skills the benign side of neural processing problems that can make learning torturous for a person with a mental disorder? Intrigued by this question, NIMH intramural neuroscientists conducted an elegant series of animal and clinical studies to explore the “path” of attention. In a first study, the researchers combined clever behavioral paradigms with functional imaging techniques to test, in humans, whether visual stimuli “compete” for neural activation. They found that different objects in a complex visual scene indeed are players in a highly competitive contest in which the stakes are recognition or suppression. The researchers further found that when the people being tested consciously paid attention to a given object, the effects of the other objects on brain activation were less intense, and that object of attention “won” the competition. In a second study, brain activation was measured in subjects who paid attention to a particular location in anticipation of an object that never appeared. In their successful attempts to ascertain if the brain, in this case, was activated in the

Story of Discovery: *Opening a Window on the Brain*

The brain is a “privileged” organ. Encased in the bony skull and cushioned by fluid, it is remarkably well-protected from the punishing toll of falls and knocks that can happen at all ages. This privileged status, however, comes at a price -- the features that so effectively protect the brain from mishap also have prohibited scientists from observing directly what in the brain *can* go wrong through illness or severe injury. Until well into the 20th century, physicians and scientists have learned most of what was known about the brain from post-mortem studies and X-rays. Only recently have researchers possessed technologies capable of mapping the *structure* of the brain. Although neuroanatomic or structural information is vitally important, the brain can only be truly understood and appreciated in its dynamic, functioning state.

The challenge of understanding the functioning brain is compounded by its extraordinary complexity. Brain activity involves approximately 100 billion nerve cells, or neurons, all communicating amongst themselves and sending orders to and receiving messages from other parts of the body. In this communication process, electrical signals within neurons trigger chemical signals that diffuse across synapses, the tiny gaps that separate neurons. In total, there may be between 100 trillion and a quadrillion synapses in the brain. Over time, and as the result of multiple influences, enduring patterns of synaptic connections ultimately give rise to integrated neuronal “circuits” in the brain. Understanding what goes on at the brain’s neuronal level to turn large- and small-scale circuits on and off and, by pruning and strengthening synapses to reorganize circuits, is among the most urgent challenges confronting modern neuroscience. For scientists to understand behavior, mental activity, and consciousness at the most fundamental level, they must see and understand the brain at work.

For more than 100 years, scientists have known that an increase in blood flow in the brain is one marker of neuronal activity. Investigators subsequently linked blood circulatory changes to oxygen consumption by active brain cells. By the early 1950s, NIH-funded investigators had developed quantitative methods for measuring whole brain blood flow in humans. Examining the functional activity of neurons and circuits through such surrogate measures as circulation and blood oxygen alone, however, is much like analyzing the ocean floor through a glass-bottom boat. Thus, in recent decades, the pace has quickened in efforts to develop innovative technologies such as positron emission tomography (PET) scanning and functional magnetic resonance imaging (fMRI) that are capable of providing detailed maps of brain activity. Multiple NIH institutes contribute to and collaborate in these efforts.

(continued)

Positron Emission Tomography (PET): The early 1970s brought the introduction of computed tomography, or CT scans, in which a series of x-rays generates two-dimensional images of soft tissue such as the brain. This innovation coincided with the development, by an NIH scientist, of a method, called a kinetic assay, that made it possible to quantify the metabolic activity of cells by attaching a radioactive tracer to glucose, which is the primary fuel for cellular activity. In the original animal studies, the amount of tracer-tagged glucose trapped inside a preserved cell could be captured on film, after the death of the animal, to depict quite accurately the level of cellular activity associated with a given behavior. These principles were subsequently extended to and validated in humans using tracer substances tagged with a short-lived radioisotope that, as it decays, emits positrons that register their impact on sensitive scanners -- thus the name, positron emission tomography (PET) scanning. When various radioisotopes are attached to natural substrates or to drugs that bind to particular neurotransmitter receptors, PET scanning affords scientists the capability to image the pharmacologic and biochemical aspects of neural function. By the 1980s, the merger of these technological strategies with innovative experimental designs for activating specific mental processes and dissecting human behaviors helped to establish PET as a centerpiece of the burgeoning field of cognitive neuroscience.

Functional Magnetic Resonance Imaging (fMRI): About the time that computed tomography and PET scanning were emerging, development of another imaging technology, known as magnetic resonance imaging began. MRI, in shorthand, works by measuring the absorption and emission of energy, but in this technology, the energy is electromagnetic, not radioactive. When a strong, uniform magnetic surrounds the body and a radio wave is passed through it, distortions in the magnetic field allow scanners to detect and image differences in the density and related features of various parts of the body. Building on earlier findings regarding the consumption of oxygen by neurons when they fire and the fact that red blood cells containing oxygen are intrinsically magnetic and thus able to perturb a larger uniform magnetic field, NIH-supported scientists and others in the late 1980s devised a method called Blood Oxygen Level Dependence, or BOLD, that lent itself to quantifying brain activity. The combination of BOLD measurements with magnetic resonance technologies makes it possible to examine, non-invasively, the actual function of the brain by capturing an image at one point in time and then imaging changes associated with various types of mental activity over a short period of time.

These imaging technologies have accelerated the pace of discovery of brain research. Yet although the roots of functional brain imaging stretch back more than a century, the field is now entering its most exciting period of development. Accumulating experience is underscoring the advantages and limitations of each approach – there are trade-offs between technologies. One, for example, is between the spatial precision, or clarity, of an image and the speed required for an imaging technology to capture the indescribably fast processing of information by the brain. Such realizations are adding impetus to the race to innovate. One direction of such innovation is to combine cutting edge technologies such as fMRI with tried-and-true techniques such as electroencephalography (EEG) and magnetoencephalography (MEG) that are easily able to detect electrical changes at the millisecond rate common to brain activity. Also in development are optical imaging technologies that promise both the spatial and temporal resolution of existing approaches at a fraction of the cost.

As science learns more about brain circuitry and learns more from cognitive neuroscience about how to activate and examine the function of particular brain circuits, differences between health and illness associated with the function of particular circuits certainly will become evident. Able to see precisely what goes wrong in what circuits and what synapses and with what chemical signals, scientists will be able to make increasingly safer medications that act with laser-like precision on affected circuits and neurotransmitter pathways and to “see” how a special kind of learning called psychotherapy works on the brain; to guide neurosurgical decisions; and to understand brain mechanisms involved in chronic, debilitating pain, among other uses. Without impinging on the brain’s privileged status, functional imaging technologies are shedding light on the awesome secrets of how the brain works.

visual cortex in the absence of visual stimulation, the investigators were able to determine which “higher” cortical areas give rise to such “top-down” signals related to attention. A third, related study, in non-human primates, pinpointed more precisely where along the flow of visual information through the brain that top-down attentional influences have their effect. Two regions in the temporal lobe known to be involved in object recognition were lesioned. Although the lesioned animals showed only mild impairment in a simple perception task, when a visual distraction was added, the animals’ performance of the task deteriorated precipitously, indicating impaired attention. These two temporal lobe regions appear to be brain sites where top-down attentional influences can affect the competition for attention among multiple visual stimuli. Collectively, these studies have advanced greatly our understanding of how and where higher cortical regions of the brain exert top-down influences on visual stimuli, resulting in attention.

Mental Health and Mental Illness Across the Life Span

Mental health and mental illness are dynamic, ever-changing phenomena. At any given moment, a person’s mental status reflects the sum total of that individual’s genetic inheritance and life experiences. The brain interacts with and responds— both in its function and in its very structure— to multiple influences continuously, across every stage of life. At different stages, variability in expression of mental health and mental illness can be very subtle or very pronounced. As an example, the symptoms of separation anxiety are normal in early childhood but are signs of distress in later childhood and beyond. It is all too common for people to appreciate the impact of developmental processes in children, yet not to extend that conceptual understanding to older people. In fact, people continue to develop and change throughout life. Different stages of life are associated with vulnerability to distinct forms of mental and behavioral disorders but also with distinctive capacities for mental health.

At any stage of life, differences in mental health and vulnerability to mental illness may occur among racial and ethnic groups. However, studies that document such differences are limited and often inconclusive and, as a result, the influence of factors such as discrimination and stereotyping on mental disorders is unknown. There is evidence that factors such as marital status, income, and education are related to the onset of certain mental disorders, regardless of race and ethnicity. To understand better the impact of mental illness on different groups, NIMH is launching a study of the prevalence of mental disorders, mental health symptoms, and related functional impairments in African Americans, Caribbean blacks, and non-Hispanic whites in FY 2000. This study will examine the effects of psychosocial factors and race-associated stress on mental health, and how coping resources and strategies influence that impact. This research will provide a database on mental health, mental disorders, and ethnicity and race.

CHILDHOOD

Childhood is a time of enormous growth and development – the timing, nature, and extent of which vary from child to child, reflecting innate individual differences as well as factors such as family (genetic) background, family interactions, and social and physical environments. Because of these rapid developmental changes, it is sometimes difficult to assess mental health problems in children; however, mental disorders do strike during childhood and, in many cases, are the precursors of adult, or lifetime, mental illnesses. It is clear that understanding the causes and how best to intervene in these disorders during childhood offers hope for preventing many cases of adult mental illness. Even when childhood disorders do not persist, they may distort a child’s normal psychological and social development, significantly impairing the child’s mental health over the long term and, possibly, increasing the likelihood of later substance abuse and other harmful behaviors.

In the U.S., as many as 10 million children may suffer from mental disorders of such magnitude that their ability to function is compromised. Unfortunately, fewer than one in five of these

children receives treatment, although efficacious pharmacological and psychosocial treatments exist for many childhood disorders – such as ADHD, depression, and disruptive disorders. Preventive interventions can also effectively reduce risk for childhood mental disorders and improve the social and emotional development of children.

Science Advances

The Long-term Impact of Depression in Adolescence. Parents, educators, and even health care providers often attribute the signs of depression in adolescents to “just a phase” and expect the youngster “to grow out of it.” Yet right now, an estimated 5% of all adolescents in the U.S. have a major depression⁸ that could lead to suicide, impair development and quality of life, cause conduct problems, and, in some cases, be related to violent behavior, such as recent school shootings. NIMH-supported researchers studied a group of young adults in their mid- to late-20s who had been diagnosed with major depression during their adolescent years, along with a group of healthy control subjects. All of the subjects were originally studied 10-15 years earlier. The group with major depression in adolescence had a high rate of suicide (7.7% compared with 0% for the controls); five times the risk for suicide attempts; and twice the risk of another occurrence of major depression – although there was no increased risk for other mental disorders. Members of this group were more likely to have been hospitalized for psychiatric or medical reasons and to be impaired in work, social, and family life. These findings underscore the devastating impact that adolescent depression can have across the lifespan and, in turn, the need for early detection and appropriate treatment.

Exploring Psychosocial Treatments for Depressed Adolescents. Evidence of the extended ramifications of adolescent depression make it urgent to identify effective, age-appropriate treatments for depressed adolescents and administer them promptly. But little data exists on what works. Some types of antidepressant medications (tricyclics) do not seem to work for adolescents; other types (serotonin uptake inhibitors) do, if used properly. Now, NIMH-supported work suggests that a form of psychosocial treatment, interpersonal psychotherapy (IPT), can be effective for adolescent depression. Youngsters – primarily Latinas between 12 and 18 years old, from low socioeconomic status families living in New York City – received interpersonal therapy adapted for adolescents (IPT-A) weekly for 12 weeks. A matched control group received clinical monitoring with limited therapy for the same period. Members of both groups were able to call upon their therapists to some extent between sessions if they felt worse. At the end of the trial, 75% (18) of the group receiving IPT-A had recovered from their depression, compared to 46% (11) of those in the clinical monitoring control group. About twice as many teens in the IPT-A group as in the control group remained in treatment for the entire period. These findings suggest that this form of psychotherapy could become an important approach for reducing depression among adolescents.

An Alternative To Hospitalization For Children With Severe Mental Illness. Although many children with severe mental illnesses are hospitalized or treated in residential treatment centers away from the children’s homes, evidence is lacking to support the effectiveness of either of these costly forms of care. A third alternative, recently examined by NIMH-supported researchers, is known as multisystemic therapy, or “MST.” This approach uses teams who take therapy directly to the children, offering home-based care and involving families, schools, and neighborhoods in the process. Evaluated in three linked studies, MST was found to offer an excellent alternative to psychiatric hospitalization or residential treatment, reducing by about 50% the need for hospitalization. When children were hospitalized, their lengths of stay were reduced by nearly 75%. MST was viewed positively by therapists, families, and the children themselves. MST demands a different structure for caregiver services from that currently used in most parts of the

⁸U.S. Dept. Health and Human Services. Mental Health: A report of the Surgeon General. Rockville, MD: DHHS, SAMHSA, CMHS, NIH, NIMH, p. 151, 1999.

country, but reorganizing in support of this community-based service promises improved outcomes for children dealing with marked emotional difficulties, while reducing the financial burden of care delivery.

Clues to the Nature of Schizophrenia. Schizophrenia is a tragic, chronic, and disabling mental illness, which typically strikes high-achieving young adults or adolescents suddenly, causing them to have hallucinations and disordered thinking, derailing their plans for education and career, and leading to a difficult and precarious life. A rare, and usually particularly severe, form of the illness begins in childhood and is referred to as childhood-onset schizophrenia, or COS. Both genetic and non-genetic influences very early in life, perhaps before birth, appear to be involved in causing a person to have schizophrenia, even though the illness does not appear until many years later in adolescence or adulthood. The long delay may be related to the progression of normal changes throughout childhood and adolescence in the cells and structures making up the brain, especially the burst of developmental changes that occur during adolescence. In the past, researchers using neuroimaging techniques have found anatomical differences in certain parts of the brains of people with schizophrenia compared to healthy people; however, since these changes appeared after the onset of illness, the relationship to brain development was not clear. In a continuing study, NIMH intramural researchers are using MRI (magnetic resonance imaging) to examine the brains of children who have COS at 2-year intervals as they mature, and comparing changes in their brain structure with those of healthy children of the same sex and ages. There are clear abnormalities in brain development in the children with COS when compared to the healthy controls. The brains of children with COS show increases in volume in the fluid-filled brain ventricles and decreases in some brain areas (such as hippocampus and cortex) – areas of the brain important for memory and planning. This pattern of changes is specific to schizophrenia. It is likely that these progressive changes in the brains of the children with schizophrenia are related to the triggering, or actual onset, of the illness. Research that focuses on these changes may help us to understand the cause and progression of the illness and to develop better medications for treating schizophrenia.

Generational Transmission of Psychopathology. In a multi-generational study, NIH-funded investigators found that, in families in which both grandparents and parents had experienced a clinical depression, a disconcerting 49% of the grandchildren showed signs of psychopathology, with high risk for anxiety. Typically, anxiety in young children is viewed to be a part of normal development, and something that the child will outgrow. In these high-risk families, however, anxiety symptoms are being transmitted across the generations, and, for family members, the onset of an anxiety disorder before puberty is linked to a high risk for the subsequent development of serious, recurring major depression.

It's 9:00 PM, Have You Tucked Your Teen In? The steady shift toward early morning school openings can contribute to diminished academic performance, memory lapses, and mood changes, as well as behavior problems. NIMH research has shown that in susceptible young people, this pattern may lead to academic, behavioral, and psychological problems, as well as increased risk for accidents and injuries, particularly for teens who drive. Previous research has indicated that optimal alertness in adolescents requires over nine hours of sleep nightly. This study shows that early school start times for adolescents are associated with significant sleep deprivation, both because nine hours of sleep would require unrealistic – if not unattainable – bedtimes and because younger teens, in particular, may have a greater biological need for sleep.

Risk for Depression in Young Women during Transition to Adulthood. A study of adolescent girls followed during the transition from high school to early adulthood has ascertained that, over a 5-year period, some 37% of the young women experienced, for the first time, a major depressive episode that had negative impact on their school performance and their intimate romantic relationships. NIMH-funded investigators found that, overall, nearly half (47%) of the young women in this study had experienced one or more episodes of major depression; this higher number includes those who had the illness prior to high school. Risk of recurrence of depression

was substantial for all the women, and particularly so for those with onsets prior to the study. Women who had psychiatric disorders other than depression also were more likely to have depressive episodes during the post-high school period.

Home Visits By Nurses When High-Risk Children Are Young Reduce Criminal Behavior In Later Years. Children born to teenaged mothers, single mothers, substance-abusing parents, or into families already invaded by poverty, illness, or psychological difficulties are at risk for criminal behavior. These children are often poorly prepared for making the best choices that lead to adult success, opting instead for a variety of antisocial or overtly criminal activities. Starting in the early 1980s, NIMH researchers selected 400 pregnant women, most of them young, unmarried, and poor, to receive home nurse visits during the pregnancies and after the birth of the children. Mothers were given instructions for maintaining good health for themselves and their children. They were educated about proper care of their children and family planning. Jobs were discussed and promoted for both income-producing and esteem-building purposes. Links were established between the mothers and health and human service agencies, and they were encouraged to make use of these services. Home visits continued until the children were 2 years old. Fifteen years later the researchers returned to talk to the mothers and their now-teenaged children, comparing them to a “control group” of mothers and children who did *not* receive home visits. They also looked at official school records and teacher’s reports, all aimed at answering the question: had those home nurse visits had a positive impact in the lives of the children? The answer is a clear *yes*: teenagers born to the women who received the home visits had fewer problems. These children managed to avoid or limit their use of illegal drugs, cigarettes, and alcohol; had fewer sexual encounters; fewer school expulsions, and fewer arrests for any sort of criminal activity. The home visit children still had problems— but they did better in responding to those problems, and tended to make more constructive and life-enhancing choices. This encouraging study confirms that prevention is effective in the risk-laden lives of young, poor, disadvantaged children (and their mothers). Early efforts on behalf of children at risk— using simple, inexpensive techniques like education and information, reassurance, and positive reinforcement— definitely work.

Story of Discovery: *Understanding & Preventing Teen Violence: Finding Common Ground*

Antisocial teenagers who commit violent criminal acts have become one of this country’s pressing and most disturbing burdens.

Despite the compelling portraits of adolescent despair and violence that have appeared in magazines and movies in recent years, the precise causes of violence among young people have long remained unclear. Communities and health care agencies need more specific information for properly targeted programs and treatments. At the heart of the matter is a basic concern: where should resources and money be directed for the most comprehensive results in preventing and reducing violent behavior among teens?

With new information now available from an ambitious series of long-term studies, effective responses can be developed as we draw closer to understanding the social forces behind adolescent aggression and violence.

Researchers have long known that aggressive behavior among teens does not result from any single factor. The shaping of a violent adolescent is based on a cluster of related risk factors, including single (or no) parents, poor vocabulary development as an infant, abuse and violence at home, neuropsychological problems, parents or friends involved in criminal activities, substandard educational opportunities, and poverty. But among the field of risk factors, which are the most common and consistent? Where can we best target intervention and treatment programs? How can we help these children, using techniques we are confident will be effective?

(continued)

In successfully identifying a basic group of four interactive “root causes” of antisocial and violent behavior (psychological problems, family conflict, negative peer influences, and social and educational deprivation), the new studies connect insights that redefine our basic knowledge of teen violence— and allow a reliable restructuring of community outreach programs.

A central point the studies share is that risk factors for adolescent violence are both learned and cumulative. Violence, in other words, is taught by example as teens “model” the violence seen throughout their childhoods in both their homes and communities, accumulating ever-greater risks of an ongoing pattern of aggression and hostility in the process. With a lack of opportunities for education and work thrown into this volatile mix, conditions favor a life based on antisocial behavior, ranging from school failures and emotional withdrawal to acts of extreme violence.

One study clearly established that children-at-risk who receive help in building effective learning skills as early as possible in their lives (beginning with verbal skills and “verbal I.Q.”) have greater success in school and related developmental advantages. Another study built on this point with work from a cross-section of rural and urban areas showing that early (starting at age 6) and comprehensive programs that cross all areas of a child’s life (home and family, school, and self) definitely reduce academic and personal difficulties before a child ever reaches adolescence.

Such early education measures are, however, often missing in the lives of disadvantaged children. In response to this, researchers considered an approach for the early teen years, after troubles with violent behavior have often already begun. A form of treatment known as multisystemic therapy (“MST”) identifies the natural strengths in a young person and their family as well as resources already in place in a specific community, capitalizing on the combined effect of these positive attributes. An individualized, home-based treatment that joins a young person with family, teachers, school counselors, and therapists in a team approach, MST encourages connections with more successful peers and offers children and families new ways to create support networks and ensure long-term benefits. The prevailing theme of MST is constructive connection as opposed to anger and isolation, and MST programs have shown a substantial reduction in violence, aggression, and criminal activity. Beyond that, MST has proven popular with families, therapists, teachers— and the involved children themselves. Unlike certain other interventions for adolescents, MST is thoroughly research-based; it has demonstrated long-term reductions in anti-social behavior and juvenile placements in a series of randomized clinical trials, as well as a substantial cost-benefit effect, and both the clinical process and supervisory protocol have been manualized.

Another related study looked at teens who have been labeled as “delinquent.” Young people who are already in some form of foster care or group home by their mid-teens are challenging individuals: they are usually not attending school, and many average as many as 14 arrests, often for felonies and violent assaults. In the past, such teens were placed in group homes or training schools, often with other offenders, and given little or nothing in the way of formal programs, therapy, or educational options. *Therapeutic Foster Care* offers an innovative new approach in which individual foster parents are carefully selected and specifically trained to work with these teenagers. Foster parents learn how to offer a structured system of supervision, consistency, appropriate discipline, behavioral goals, and rewards in their home. Like MST, focused foster care identifies resources and options through community health programs and school, is less expensive than alternative group settings for care, and has produced dramatic reductions in criminal behavior among participating teenagers. Interestingly, youth appear much less inclined to run away from therapeutic foster care settings than from other types of group homes.

As the contributing factors in adolescent violence have emerged, researchers are mindful that many antisocial young people also suffer with underlying psychological disorders, including psychopathy, characterized in part by a lack of empathy, remorse, or guilt for inappropriate or criminal behaviors, and depression. After one of the studies pioneered a course for high schoolers in coping with stress (using group discussions with counselors and psychologists, role-playing, and other group activities), participating teens had fewer cases of depression and scored higher on standard tests that assessed their outlook and attitudes. Although more work is needed over a longer period of time to see how long the beneficial effect of such programs persist, this study gives clear

confirmation that therapeutic programs in high schools can reduce depression among adolescents, reducing the possibility of “self-sabotage” due to personality issues and psychological disorders.

The positive response of young people to sympathetic, individualized attention and well-structured self-help programs is not a surprise, but a research-based outcome. *Knowing* more precisely how to create and balance these programs is indicative of significant progress in our understanding of violent behavior in young people—and what to do about it. With a confident awareness of adolescent violence as a combination of multiple elements and interacting causes, programs can now be designed that address an active combination of life factors, including psychological issues, early learning needs, family support, and pro-active peer associations (and fewer contacts with antisocial peers), all aimed at halting the slow journey toward violent and destructive behaviors and, ultimately, criminal lives.

The apparently simple insight that underlies and connects this new group of studies—that focusing on any one area of an aggressive teenager’s life is neither specifically useful or cost-effective in terms of reducing violence and hostility—is not so simple when the costly and inadequate social and medical responses of the past several years are taken into account. In exploring various treatments at different points in teenagers’ lives, these studies offer an organizing principle for fresh therapeutic possibilities that are truly “holistic,” with all aspects of a distressed teenager’s life included in workable alternatives to disappointment, anger, and hopelessness.

Incorporating the efforts of researchers from across the country, in cities, small towns, and rural areas, these studies come together to provide formidable new tools for helping this country’s aggressive and violent young people, establishing a vital common ground for treatment and intervention programs.

ADULT AND OLDER YEARS

For about one in five Americans, adulthood— a time for achieving productive vocations and for sustaining close relationships at home and in the community— is interrupted by mental illness. Understanding why and how mental disorders occur in adulthood, often with no apparent portents of illness in earlier years, draws heavily on the full panoply of research supported and conducted by NIMH. In years past, the onset, or occurrence, of mental illness in the adult years, was attributed principally to observable phenomena— for example, the burden of stresses associated with career or family, or the inheritance of a disease viewed to run in a particular family. Such explanations now may appear naive at best. Contemporary studies of the brain and behavior are racing to fill in the picture by elucidating specific neurobiological and genetic mechanisms that are the platform upon which a person’s life experiences can either strengthen mental health or lead to mental illness. It now is recognized that factors that influence brain development prenatally may set the stage for a vulnerability to illness that may lie dormant throughout childhood and adolescence. No single gene has been found to be responsible for any specific mental disorder; rather, variations in multiple genes contribute to a disruption in healthy brain function that, under certain environmental conditions, results in a mental illness. It also is recognized that socioeconomic factors affect individuals’ vulnerability to mental illness and mental health problems. Certain demographic and economic groups are more likely than others to experience mental health problems and some mental disorders. Vulnerability alone may not be sufficient to cause a mental disorder; rather, the causes of most mental disorders lie in some combination of genetic and environmental factors, which may be biological or psychosocial.

Science Advances

Young Adults Most Susceptible to Panic Disorder. Panic disorder is characterized by unexpected and repeated episodes of intense fear accompanied by physical symptoms that often mimic the symptoms of a heart attack or other life-threatening medical condition. A panic attack

may necessitate the immediate use of costly medical procedures to rule out these conditions before the panic disorder is diagnosed correctly and treated properly. About 2% of U.S. adults, approximately 2.8 million people, have panic disorder in any given year – generally twice as many women as men.⁹ Until now, however, we have not known how many of the people with panic disorder each year represent new, and how many repeat, cases or what the natural progression of the disorder is likely to be in these individuals. NIMH-supported researchers re-interviewed almost 2,000 people living in Baltimore who had been interviewed first in 1981 in an NIMH epidemiologic survey. The interviews at both time points entailed a standard diagnostic test to detect any current or previous mental disorders. In the intervening 12 years, new cases of panic disorder occurred at a rate of 1.43 cases per 1,000 people per year and the incidence was much greater in females than males. The incidence rate also declined with age: 3.43 cases (per 1,000 people per year) for ages 18-29 years, 2.32 for ages 30-44, 0.61 for ages 45-64, and 0 for people over 65 in this group. This study reveals that panic disorder is most likely to begin when a person is young and suggests that it may often, but not always, be an outgrowth of a pre-existing anxiety disorder. Timely, appropriate treatment can reduce or prevent panic attacks in 70 to 90% of people with the disorder.

Changing Women's Behavior to Prevent Disease. AIDS is now a leading cause of premature death for American women and, particularly, for African American and Hispanic women. Women, who acquire the virus primarily through sexual contact, now account for approximately 20% of new AIDS cases. Although only 21% of U.S. women are African American and Hispanic, approximately 77% of AIDS cases in women are from these minority groups.¹⁰ In response to this trend, NIMH-funded investigators conducted an HIV prevention trial involving almost 700 women living in 18 low-income housing developments in five U.S. cities. Activities designed to educate women included workshops on how to reduce the risk for HIV infection and other community HIV prevention events led by women who were popular opinion leaders among their peers. Control groups consisted of women did not participate in the prevention-focused activities (interventions), but were surveyed similarly to the intervention groups. The proportion of women in the intervention groups who reported any unprotected intercourse within the past 2 months declined from 50% to 38%, and the percentage of times these women had intercourse protected by condoms increased from 30% to 47%. In addition, 12 months later, the frequency of unprotected intercourse acts within the past 2 months among these women tended to be lower than when they initially entered the trial. By contrast, there was essentially no change in these risky behaviors among the women in the control groups that did not participate in the activities focused on prevention.

Depressed Mothers' Speech Affects Learning In Babies. As many as 15% of mothers become depressed after having a baby. For those who get "postpartum blues," dealing with a newborn can be very difficult. The healthy growth and development of babies, however, demands their mothers' focused and energetic attention and stimulation. With that in mind, an NIMH-supported team investigated if speech patterns— the tones, sound quality, and "musicality" in a mother's voice— varied in their effects on the babies of depressed mothers versus the babies of non-depressed mothers. A group of 21 mothers with varying degrees of postpartum depression were tape-recorded while talking to their babies. Later, a group of 4-month old babies (*not* the children of the depressed mothers) were trained to look at a picture— an abstract pattern— while listening to short segments of both the recordings of the depressed mothers as well as recordings of non-depressed mothers. The babies learned to watch the pattern with interest and focus— *but only* when they were hearing the voices of non-depressed mothers. The pitch and tones in a depressed mother's voice do *not* promote attention or learning in a baby. Babies who experience early difficulties in learning often have later problems with behavior and school performance, so

⁹U.S. Dept. Health and Human Services. Mental Health: A report of the Surgeon General. Rockville, MD: DHHS, SAMHSA, CMHS, NIH, NIMH, p. 234, 1999.

¹⁰Worley PM and Fleming PL: AIDS in women in the United States: Recent trends. JAMA, 278:911-916, 1997.

increased recognition and treatment of postpartum depression could have important and lasting effects for both mother *and* child.

Redefining The Need For Mental Health Care Among Older Americans. Older people visit their primary care doctors more often than do younger people, but their mental health concerns receive relatively less attention. Little reliable information exists about what sorts of emotional and psychological difficulties and needs emerge among older people— or how medical practitioners and health care institutions should respond to those needs. NIMH-supported researchers screened 224 patients between the ages of 60 and 89 years of age, from a variety of socioeconomic backgrounds. The study confirmed not only that mental health problems are common among older people, but that the nature of problems differs from those seen in younger individuals. Depression still ranks very high as an issue among the elderly— but so do dementia, alcohol abuse and dependence, and bipolar disorder. Observation and management of these concerns will go far toward controlling costs of care, particularly given the very effective tools (simple but reliable in-office tests, drug therapies) now available to primary care practitioners.

Adequacy of Psychopharmacological Treatment of Depression Found Wanting. Although modern antidepressant medications are highly effective when administered properly, long-term study indicates that most people with episodes of major depression receive inadequate antidepressant dosages and receive the medication for an inadequate period, allowing depressive symptoms to recur. More alarming, a substantial percentage of seriously depressed people, including those at risk for suicide, receive no medication. This finding by NIMH investigators should spur efforts to provide adequate treatment of depression in the community.

Psychiatric Disorders and Disability in Refugee Survivors of Mass Violence. A recent NIMH-funded study found high levels of disability and functional impairment in a population of refugees from the conflict in Bosnia and Herzegovina who had experienced multiple traumatic events, including torture suffered by one in five. In response to culturally validated measures used by the researchers, 39% of the refugees reported symptoms that meet diagnostic criteria for depression, and 26% reported symptoms meeting criteria for post-traumatic stress disorder (PTSD); 21% reported symptoms comorbid for both disorders. More than one-in-four self-reported having a disability, with the highest rate of disability occurring in those who experienced both depression and PTSD. These high levels of disability and functional impairment among trauma-exposed populations raise concern about the effectiveness of efforts to provide aid if acute and chronic mental health concerns are not addressed.

Recurrence of Major Depression. A long-term follow-up study of psychiatric patients who sought treatment for an episode of major depression found that over a 15-year period, 80% of these patients experienced at least one additional episode of major depression. Even among patients who recovered for a period of at least 5 years, 60% suffered another depressive episode within the next 10 years. The significant predictors of recurrence of depression included being female, the number and duration of prior episodes of depression, and not being married. This study provides useful information for predicting who will or will not experience a recurrence of depression after their first major depressive episode and, thus, how the amount and duration of antidepressant medications should be adjusted for them by mental health providers.

NEW INITIATIVES

The NIMH will capitalize on scientific opportunities to advance fundamental knowledge of the brain and behavior, while continuing to emphasize research that advances the Institute's mission to understand the causes and improve the treatment and prevention of mental illnesses. Within the estimated FY 2001 President's Budget, new NIMH initiatives will include:

Mental Health and Violence in Children and Adolescents. Violent behavior – especially by youth – is commanding increasing attention as a major U.S. public health problem, raising national concern for finding effective approaches to preventing and reducing violence. NIMH will encourage a new generation of studies to clarify relationships between mental disorders and youth violence and suicide, including research to prevent the emergence of syndromes and disorders, and to interrupt the development, escalation, and/or continuation of serious conduct problems, violent behavior, and other co-occurring disorders.

Early Intervention and Treatment for Children and Adolescents with Mental Disorders.

Some serious mental disorders begin early in childhood and persist throughout adult life. Early detection and treatment of these disorders may result in a better outcome in adult life. NIMH will expand research on early intervention and treatment for childhood disorders such as depression, anxiety, attention deficit hyperactivity disorder (ADHD), and eating disorders.

Genetics of the Brain and Mental Disorders. Susceptibility to mental illness is hereditary and the rapid increase in knowledge about genes at the molecular level offers promise for understanding the causes and improving treatments and prevention of these illnesses. NIMH will expand research on the study of genes expressed throughout development in the brain and expand understanding of the role of these genes in complex behaviors. Other research will focus on high-resolution mapping of mental disorders and their biological substrates.

The Healthy Brain Project. The health of the brain – its very structure and function – can change throughout life in response to normal development, emotional stress, and other processes, yet a decline in the health of the brain and nervous system is no more necessary than is a decline in the health of the heart or other organ as a consequence of disease or aging. NIMH, with the National Institute on Aging (NIA) and the National Institute of Neurological Disorders and Strokes (NINDS), will organize and launch the Healthy Brain Project to collect information needed to identify and understand risk factors and to develop plans for interventions to improve the cognitive and emotional health of the American people.

Reducing Disparities in Mental Health among Racial and Ethnic Minorities and Women.

There are important differences in patterns of mental disorders in racial and ethnic minorities vs. the broader U.S. population, and in women vs. men. Racial and ethnic minority populations are affected by cultural bias in the systems devised to classify and measure mental disorders. For example, disparities abound in treatment utilization: some minority groups are underrepresented in the outpatient treatment population while, at the same time, overrepresented in the inpatient population. Substantial sex differences exist in the prevalence of mood and anxiety disorders, and in the clinical course and outcomes of bipolar disorder and schizophrenia. Beyond these gender and ethnic differences, individuals with lower socioeconomic status are over twice as likely to have a mental disorder compared to those in the highest socioeconomic status. Low socioeconomic status is an important risk factor for major depressive disorder in women and for substance abuse and antisocial personality disorders in men. Consistent with the goals of *Healthy People 2010*, NIMH will expand research to untangle the web of causal factors – biological, psychological, social, and cultural – that contribute to such differences. Research will include epidemiological studies that oversample ethnic groups such as African Americans, Hispanics, and Native Americans to obtain information on disparities in mental health, along with studies that examine how racial and ethnic minority status influences response to treatments, new interventions designed to overcome such differences, and barriers and facilitators of access to mental health care and treatment for different groups.

Clinical Trials: Methodology Improvement and Ancillary Studies. The design and methodology of clinical trials and their assessments have not kept pace with research progress in understanding the pathogenesis, clinical course, and outcomes of mental disorders and enhancing

clinical response to treatments. NIMH will expand research on improving the methods of clinical trials and increasing the knowledge that can be gained from such trials.

Improving Mental Health Services for Children and Adolescents. Children with mental disorders respond to treatment better if their families are involved in the treatment. However, the vast majority of clinical treatments, services, and preventive models do not involve families in treatment, but give parents or other family members largely passive roles. NIMH will encourage research on the impact of family involvement in treatment planning. NIMH also will collaborate with Substance Abuse and Mental Health Services Administration (SAMHSA) on determining the effectiveness of treatments for children and adolescents in community mental health care through the Center for Mental Health Services (CMHS) Comprehensive Community Mental Health Services Program for Children with Serious Emotional Disturbances.

Understanding Trust and Adherence in Clinical Treatment for People with Mental Disorders. Beliefs about the causes of mental illness, the nature of treatment, the motives of clinicians and fears about stigma, the illness, and the long-term consequences of the illness and its treatment can prevent people with severe and disabling mental disorders from seeking treatment or staying in treatment. NIMH will encourage research collaborations between behavioral scientists and mental health researchers to focus on these problems of engagement, retention, and effectiveness. Other research will encourage services researchers to collaborate with basic social and behavioral scientists and incorporate the theory and methods of behavioral science to help understand how characteristics of individuals, families, and social and cultural environments affect individuals' decisions about service use. Another initiative will encourage research on adherence to treatment and behavior change, building on fundamental research in the behavioral and biomedical sciences.

Reducing Stigma Associated with Mental Illnesses and Interventions. As one of the most stigmatized groups in society, people with mental disorders suffer not only from their illness but also from the added burden of discrimination, prejudice, and occasionally, hate crimes. NIMH will expand research to increase understanding of the malleable variables underlying the stigmatization of people with mental illness; develop interventions that help such individuals cope with stigma and discrimination; and change society's attitudes.

Suicide Prevention. Approximately 90% of suicide victims had a mental or substance abuse disorder (or combination) at the time of death. Less than a third were in treatment, and of those, few received adequate treatment for mental and substance abuse disorders. NIMH will encourage research to design and evaluate suicide preventive efforts, determining their safety and effectiveness for particular groups at risk.

Functional Outcomes in Psychopathology. The diagnosis of mental disorders, such as schizophrenia, is based on symptoms and assessment of disability. However, the measurement of this disability and the effects of reducing this disability on functional outcomes have been neglected. It is possible that an emphasis on symptoms that are not major causes of functional disability could impede prevention and rehabilitation research for the major mental disorders. NIMH will encourage more intensive research on functional outcomes related both to specific mental disorders and common to a range of disorders; outcomes related to different treatment compounds and modalities that affect neurocognitive functioning differentially; and standardized measures that relate to functionally significant domains of outcome.

Identifying and Modeling Genetic and Environmental Risk Factors for Mental Disorders. New opportunities exist for modeling genetic, molecular and cellular processes responsible for some biological and behavioral changes associated with susceptibility to psychiatric disorders and response to treatment. NIMH will encourage research on two separate aspects of model development: biologically relevant manipulations, representing risk factors for mental illnesses;

and simple behavioral measures for assessing the effects of these manipulations. This new focus on clinically relevant, but simplified, behavioral measures will stimulate the identification of novel genes, signaling molecules, and neurocircuits.

Mechanisms of Therapeutic Change in Psychotherapy and Mental Health Services. Studies of the effects of psychotherapy and mental health services have been guided largely by two major questions: (a) Does the therapy or service work? And (b) What treatment, by whom, is most effective, for which condition, under which set of circumstances? Now research is needed on *how and why* therapy works and *how and why* some factors (e.g., child, parent, contexts) influence outcome. NIMH will encourage research to build knowledge about these factors.

Basic Biobehavioral Studies of Anger and Related States. The study of emotion has progressed markedly over the past two decades. New animal models of emotion have been developed, and the emergence of neuroimaging and related technologies has permitted studies based on animal models that explore brain circuits involved in emotional behavior. This progress has been particularly marked in the understanding of fear and related states, while basic research on anger has received much less attention. Considerable efforts have been devoted to applied issues of violence, aggression, and impulse control, and their pervasively harmful effects; however, basic research on anger as a fundamental emotion, which could contribute to an analysis of these problems, remains understudied. Accordingly, NIMH proposes to fund research projects devoted to anger and related emotional states.

Linking Basic Genetic Data to Mental Health. It is now possible to study the nervous system in mammalian systems at levels of detail previously possible only in small model systems. NIMH will expand research on genetic, cellular, and molecular analysis, in mammals, of important brain molecules identified in simple systems to begin to bridge the gap between findings from model systems and human neural processes involved in complex mental health disorders. This will include effort to link the molecular genetics of the circadian clock system in the mouse with similar genes in humans to understand the impact of altered clock genes and clock gene expression for human health and well-being. Dysfunctional circadian systems are central to emotional and cognitive disturbances and also have been shown to affect the performance and behavior of adolescents. Other research will focus on how individual variation in the efficacy and tolerability of drugs used in the treatment of mental disorders is linked to the genetic heterogeneity of the disorders.

Studying the Effects of Managed Behavioral Health Care. Managed care has fundamentally changed how mental health services are allocated, thereby altering actual mental health care delivery. Providing mental health insurance parity in benefit packages is possible only through managed behavioral health care. To date, the structural complexity of separate benefits, often managed by separate companies, has not been well studied, especially in people with co-existing conditions – both physical and mental disorders, as well as mental and substance use disorders. NIMH proposes to encourage research to address these questions.

Developing Burden of Disease Assessment. The Global Burden of Disease (GBD) study emphasized the magnitude of the impact of mental illness on disability in the community. Simultaneously, interest and concern regarding the methodology used in the GBD study, notably Disability Adjusted Life Years (DALYs), have stimulated examination of various aspects of the methodology, resulting in the development of refined methods to incorporate empirical data as the basis for disability weights, as well as the potential to reflect change in disability level as a consequence of service and treatment interventions. NIMH will expand research to continue to improve the methodology of assessing the burden of mental illness.

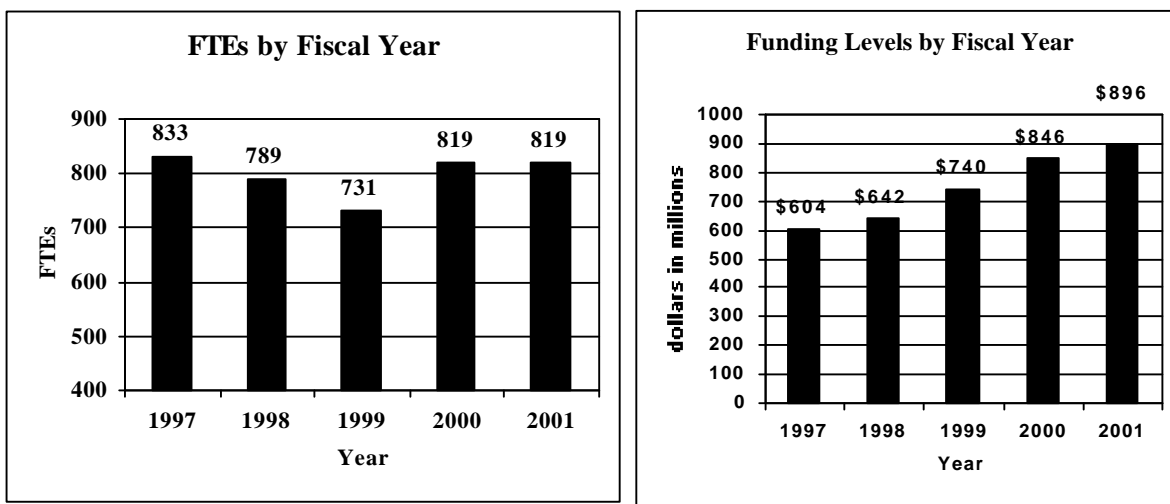
Prevention of Relapse of Anorexia Nervosa and Bulimia Nervosa. One of the major limitations of current treatments for patients with eating disorders is the frequent failure to achieve

full recovery and the high relapse rate after initial improvement. NIMH will encourage research on development and testing of interventions and therapeutic strategies aimed at preventing relapse in patients with eating disorders, including both psychosocial and pharmacological interventions and combined treatment modalities. Because of the difficulties in recruiting and retaining patients with eating disorders in clinical trials, multi-site studies will be encouraged.

Budget Policy

The Fiscal Year 2001 budget request for the NIMH is \$896,059,000, excluding AIDS, an increase of \$50,083,000 and 5.9% over the FY 2000 level. Included in this total is \$24,704,000 for the following NIH Areas of Special Emphasis: \$3,700,000 for Biology of Brain Disorders; \$800,000 for New Approaches to Pathogenesis; \$9,904,000 for New Preventive Strategies Against Disease; \$900,000 for New Avenues for the Development of Therapeutics; \$1,300,000 for Genetic Medicine; \$1,450,000 for Bioengineering, Computers, and Advanced Instrumentation; \$6,400,000 for Health Disparities; and \$250,000 for Biomedical Information Science and

Technology Initiative. A five year history of FTEs and Funding Levels for NIMH are shown in the graphs below:

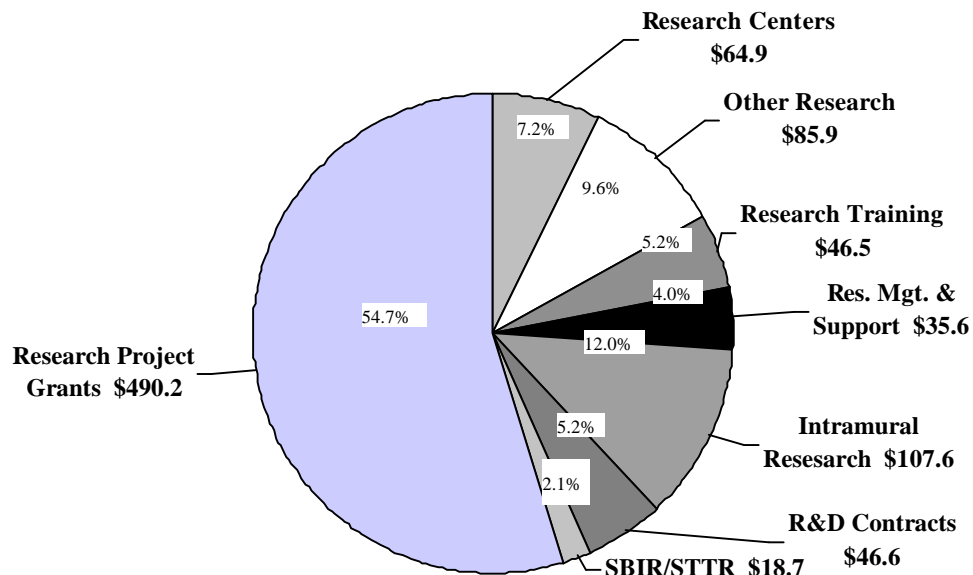


One of NIH's highest priorities is the funding of medical research through research project grants (RPGs). Support for RPGs allows NIH to sustain the scientific momentum of investigator-initiated research while providing new research opportunities. To control the growth of continuing commitments and support planned new and expanded initiatives, the Fiscal Year 2001 request provides average cost increases of 2 percent over Fiscal Year 2000 for competing RPGs. Noncompeting RPGs will receive increases of 2 percent on average for recurring costs. This strategy will ensure that NIH can maintain a healthy number of new awards, especially for first time researchers.

Promises for advancement in medical research are dependent on a continuing supply of new investigators with new ideas. In the Fiscal Year 2001 request, NIMH will support 1,399 pre- and postdoctoral trainees in full-time training positions. Stipends will increase by 2.2% over Fiscal Year 2000 levels. The Fiscal Year 2001 request includes funding for 50 research centers, 488 other research grants, including 8 new clinical career awards, and 53 R&D contracts. The mechanism distribution by dollars and percent change are displayed below:

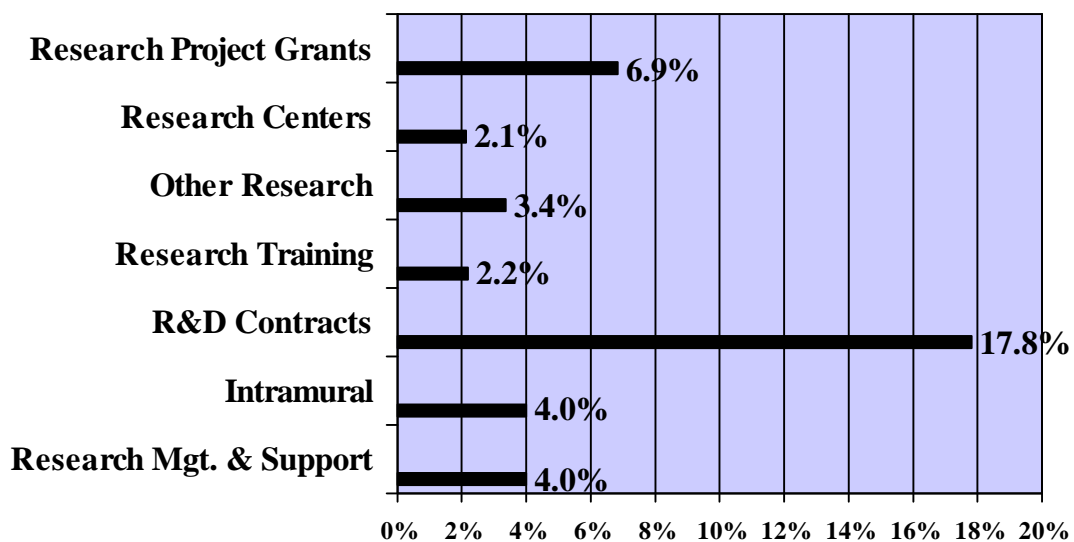
FY 2001 Budget Mechanism

(Dollars in Millions)



FY 2001 Estimate

Percent Change from FY 2000 by Mechanism



NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

Budget Mechanism

MECHANISM	FY 1999 Actual		FY 2000 Estimate		FY 2001 Estimate	
	No.	Amount	No.	Amount	No.	Amount
Research Grants:						
<u>Research Projects</u>						
		\$257,757,00				\$348,230,00
Noncompeting	966	0	1,092	\$301,275,000	1,215	0
Administrative supplements	29	2,349,000	29	2,401,000	29	2,449,000
Competing:						
Renewal	111	37,716,000	136	49,836,000	116	44,843,000
New	326	78,779,000	399	104,094,000	340	93,666,000
Supplements	5	834,000	6	1,102,000	5	992,000
Subtotal, competing	442	117,329,000	541	155,032,000	461	139,501,000
Subtotal, RPGs	1,408	377,435,000	1,633	458,708,000	1,676	490,180,000
SBIR/STTR	70	15,368,000	78	17,728,000	81	18,659,000
Subtotal, RPGs	1,478	392,803,000	1,711	476,436,000	1,757	508,839,000
<u>Research Centers</u>						
Specialized/comprehensive	48	61,083,000	50	63,533,000	50	64,868,000
Clinical research	0	0	0	0	0	0
Biotechnology	0	0	0	0	0	0
Comparative medicine	0	0	0	0	0	0
Research Centers in Minority Institutions	0	0	0	0	0	0
Subtotal, Centers	48	61,083,000	50	63,533,000	50	64,868,000
<u>Other Research</u>						
Research careers	336	40,325,000	345	42,662,000	353	44,612,000
Cancer education	0	0	0	0	0	0
Cooperative clinical research	40	12,364,000	40	12,636,000	40	12,901,000
Biomedical research support	0	0	0	0	0	0
Minority biomedical research support	0	0	0	0	0	0
Other	95	27,251,000	95	27,849,000	95	28,433,000
Subtotal, Other Research	471	79,940,000	480	83,147,000	488	85,946,000
Total Research Grants	1,997	533,826,000	2,241	623,116,000	2,295	659,653,000
<u>Training</u>	FTEPs		FTEPs		FTEPs	
Individual awards	321	8,413,000	321	9,096,000	321	9,294,000
Institutional awards	1,063	31,184,000	1,078	36,419,000	1,078	37,212,000
Total, Training	1,384	39,597,000	1,399	45,515,000	1,399	46,506,000
Research & development contracts (SBIR/STTR)	54 0	38,068,000 0	52 0	39,597,000 0	53 0	46,642,000 0
Intramural research	FTEs 447	96,370,000	FTEs 522	103,485,000	FTEs 522	107,624,000
Research management and support	284	32,218,000	297	34,263,000	297	35,634,000
Cancer prevention & control	0	0	0	0	0	0
Construction		0		0		0
Total, IC	731	740,079,000	819	845,976,000	819	896,059,000
(Clinical Trials)		78,084,000		89,098,000		94,279,000

Note: Includes FTEs associated with HIV/AIDS research activities. Funds to support these FTEs are included in the Office of AIDS Research.

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health

Budget Authority by Activity
(dollars in thousands)

ACTIVITY	FY 1999 Actual		FY 2000 Estimate		FY 2001 Estimate		Change	
	FTEs	Amount	FTEs	Amount	FTEs	Amount	FTEs	Amount
<u>Extramural Research:</u>								
Extramural research and training		\$611,491		\$708,228		\$752,801		\$44,573
Subtotal, Extramural research		611,491		708,228		752,801		44,573
Intramural research	447	96,370	522	103,485	522	107,624	0	4,139
Research management and support	284	32,218	297	34,263	297	35,634	0	1,371
Total obligations	731	740,079	819	845,976	819	896,059	0	50,083
Unobligated balance lapsing		—		—		—		—
Total, Budget Authority	731	740,079	819	845,976	819	896,059	0	50,083

Note: Includes FTEs associated with HIV/AIDS research activities. Funds to support these FTEs are included in the Office of AIDS Research.

NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

Summary of Changes

2000 Estimated budget authority		\$845,976,000	
2001 Estimated budget authority		896,059,000	
Net change		50,083,000	
CHANGES	2000 Current Estimate Base		Change from Base
	FTEs	Budget Authority	FTEs Budget Authority
A. Built-in:			
1. Intramural research:			
a. Within grade increase		\$38,716,000	\$558,000
b. Annualization of January 2000 pay increase		38,716,000	478,000
c. January 2001 pay increase		38,716,000	1,074,000
d. One day less pay		38,716,000	(152,000)
e. Payment for centrally furnished services		22,634,000	951,000
f. Increased cost of laboratory supplies, materials, and other expenses		42,135,000	1,731,000
Subtotal			4,640,000
2. Research Management and Support:			
a. Within grade increase		23,444,000	411,000
b. Annualization of January 2000 pay increase		23,444,000	290,000
c. January 2001 pay increase		23,444,000	651,000
d. One day less pay		23,444,000	(92,000)
e. Payment for centrally furnished services		4,115,000	173,000
f. Increased cost of laboratory supplies, materials, and other expenses		6,704,000	276,000
Subtotal			1,709,000
Subtotal, Built-in			6,349,000

NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

Summary of Changes--continued

CHANGES	2000 Current Estimate Base		Change from Base	
	No.	Amount	No.	Amount
B. Program:				
1. Research project grants:				
a. Noncompeting	1,092	303,676,000	123	47,003,000
b. Competing	541	155,032,000	(80)	(15,531,000)
c. SBIR/STTR	78	17,728,000	3	931,000
Total	1,711	476,436,000	46	32,403,000
2. Centers	50	63,533,000	0	1,335,000
3. Other research	480	83,147,000	8	2,799,000
4. Research training	1,399	45,515,000	0	991,000
5. Research and development contracts	52	39,597,000	1	7,045,000
Subtotal, extramural				44,573,000
	<u>FTEs</u>		<u>FTEs</u>	
6. Intramural research:				
a. Programmatic changes	522	103,485,000	0	(501,000)
b. Special emphasis areas	0	0	0	0
Subtotal, intramural	522	103,485,000	0	(501,000)
7. Research management and support	297	34,263,000	0	(338,000)
Subtotal, program		845,976,000		43,734,000
Total changes	819		0	50,083,000

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health

Budget Authority by Object

	FY 2000 Estimate	FY 2001 Estimate	Increase or Decrease
Total compensable workyears:			
Full-time employment	819	819	0
Full-time equivalent of overtime and holiday hours	2	2	0
Average ES salary	\$129,356	\$130,200	\$844
Average GM/GS grade	10.6	10.6	0.0
Average GM/GS salary	\$58,090	\$60,239	\$2,149
Average salary, grades established by act of July 1, 1944 (42 U.S.C. 207)	\$69,949	\$72,537	\$2,588
Average salary of ungraded positions	\$68,595	\$71,133	\$2,538
OBJECT CLASSES	FY 2000 Estimate	FY 2001 Estimate	Increase or Decrease
11.1 Personnel Compensation:			
11.1 Full-Time Permanent	\$35,225,000	\$37,048,000	\$1,823,000
11.3 Other than Full-Time Permanent	8,626,000	9,073,000	447,000
11.5 Other Personnel Compensation	1,688,000	1,775,000	87,000
11.8 Special Personnel Services Payments	5,261,000	5,534,000	273,000
11.9 Total Personnel Compensation	50,800,000	53,430,000	2,630,000
12.0 Personnel Benefits	11,355,000	11,943,000	588,000
13.0 Benefits for Former Personnel	5,000	5,000	0
Subtotal, Pay Costs	62,160,000	65,378,000	3,218,000
21.0 Travel & Transportation of Persons	1,370,000	1,409,000	39,000
22.0 Transportation of Things	199,000	205,000	6,000
23.1 Rental Payments to GSA	0	0	0
23.2 Rental Payments to Others	2,009,000	2,066,000	57,000
23.3 Communications, Utilities & Miscellaneous Charges	1,829,000	1,880,000	51,000
24.0 Printing & Reproduction	611,000	628,000	17,000
25.1 Consulting Services	625,000	643,000	18,000
25.2 Other Services	7,204,000	7,407,000	203,000
25.3 Purchase of Goods & Services from Government Accounts	57,368,000	65,078,000	7,710,000
25.4 Operation & Maintenance of Facilities	3,547,000	3,647,000	100,000
25.5 Research & Development Contracts	24,009,000	24,684,000	675,000
25.6 Medical Care	359,000	369,000	10,000
25.7 Operation & Maintenance of Equipment	974,000	1,001,000	27,000
25.8 Subsistence & Support of Persons	0	0	0
25.0 Subtotal, Other Contractual Services	94,086,000	102,829,000	8,743,000
26.0 Supplies & Materials	4,732,000	4,865,000	133,000
31.0 Equipment	10,347,000	10,638,000	291,000
32.0 Land and Structures	0	0	0
33.0 Investments & Loans	0	0	0
41.0 Grants, Subsidies & Contributions	668,631,000	706,159,000	37,528,000
42.0 Insurance Claims & Indemnities	0	0	0
43.0 Interest & Dividends	2,000	2,000	0
44.0 Refunds	0	0	0
Subtotal, Non-Pay Costs	783,816,000	830,681,000	46,865,000
Total Budget Authority by Object	845,976,000	896,059,000	50,083,000

Note: Includes FTEs associated with HIV/AIDS research activities. Funds to support these FTEs are in the NIH Office of AIDS Research.

NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

Salaries and Expenses

OBJECT CLASSES	FY 2000 Estimate	FY 2001 Estimate	Increase or Decrease
Personnel Compensation:			
Full-Time Permanent (11.1)	\$35,225,000	\$37,048,000	\$1,823,000
Other Than Full-Time Permanent (11.3)	8,626,000	9,073,000	447,000
Other Personnel Compensation (11.5)	1,688,000	1,775,000	87,000
Special Personnel Services Payments (11.8)	5,261,000	5,534,000	273,000
Total Personnel Compensation (11.9)	50,800,000	53,430,000	2,630,000
Civilian Personnel Benefits (12.0)	11,355,000	11,943,000	588,000
Benefits to Former Personnel (13.0)	5,000	5,000	0
Subtotal, Pay Costs	62,160,000	65,378,000	3,218,000
Travel (21.0)	1,370,000	1,409,000	39,000
Transportation of Things (22.0)	199,000	205,000	6,000
Rental Payments to Others (23.2)	2,009,000	2,066,000	57,000
Communications, Utilities and Miscellaneous Charges (23.3)	1,829,000	1,880,000	51,000
Printing and Reproduction (24.0)	611,000	628,000	17,000
Other Contractual Services:			
Advisory and Assistance Services (25.1)	521,000	536,000	15,000
Other Services (25.2)	7,204,000	7,407,000	203,000
Purchases from Govt. Accounts (25.3)	41,884,000	43,227,000	1,343,000
Operation & Maintenance of Facilities (25.4)	3,547,000	3,647,000	100,000
Operation & Maintenance of Equipment (25.7)	974,000	1,001,000	27,000
Subsistence & Support of Persons (25.8)	0	0	0
Subtotal Other Contractual Services	54,130,000	55,818,000	1,688,000
Supplies and Materials (26.0)	4,728,000	4,861,000	133,000
Subtotal, Non-Pay Costs	64,876,000	66,867,000	1,991,000
Total, Administrative Costs	127,036,000	132,245,000	5,209,000

NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

SIGNIFICANT ITEMS IN HOUSE AND SENATE APPROPRIATIONS COMMITTEE REPORTS

FY 2000 House Appropriations Committee Report Language (H. Rpt. 106-370)

Item

Alzheimer's Disease - NIMH's expanding neuroscience and behavioral research portfolios continue to play an instrumental role in advancing science's understanding of Alzheimer's disease. It was NIMH supported researchers who found that a particular gene product, APO E 4, is associated with increased behavioral disturbances in Alzheimer's disease. The Institute is urged to continue its close collaboration with NIA and NINDS and to enhance its investment in research on Alzheimer's disease. (p.104)

Action taken or to be taken

NIMH maintains its active mutual interest with the National Institutes on Aging (NIA) and Neurological Disorders and Stroke (NINDS) in understanding and treating Alzheimer's disease. NIMH currently supports more than 100 investigators who are examining biological and behavioral aspects of this disorder. Future efforts will encompass analyses of genetic, cell and protein biochemistry; neuroanatomical, neuroimaging, and pharmacological research; studies of symptom co-morbidity and behavioral dysfunction; and disparate issues involving treatment and care giving. This broad based, collaborative effort will provide the most effective means to advance our understanding of this disease.

Item

Depression - The Committee urges the NIMH to enhance research that will help explain depression, including the search for genes through which susceptibility is inherited, environmental risk factors that may interact with genetic factors, and biological changes in the brain associated with this disorder. The Committee commends the NIMH's emphasis on funding clinical research to develop new ways to treat children and adolescents for depression and to adequately test the effectiveness of adult medications being routinely prescribed for children. The Committee also supports NIMH's commitment to assess different treatments and therapies for treatment-resistant depression. (p. 104)

Action taken or to be taken

NIMH issued two solicitations for molecular genetic studies of several disorders, including recurrent, early onset major depressive disorder (MDD). One large collaborative genetics research project has been funded to date, in which scientists at six research institutions across the United States will gather clinical and genetic data from over 750 families in which two or more siblings suffer from recurrent, early onset MDD. Aims are to identify genes that confer vulnerability to these disorders, and to generate resources that will be available for genetic analyses by the wider scientific community. NIMH led a \$4 million initiative, supported by ten other NIH institutes, to fund 17 projects that will develop new, powerful statistical methods to analyze family data and find genes for MDD and other complex disorders. NIMH was the primary agency among seven NIH institutes to fund a project by private industry and two academic institutions to identify the most common type of genetic sequence variation – single nucleotide polymorphisms, or SNPs – in parts of the human genome carrying genes expected to play a role in MDD and other mental disorders.

NIMH also has issued a Program Announcement to encourage collaborations among genetic research groups worldwide, by which multiple samples of depressive disorder pedigrees can be assembled into one large data set for combined analysis.

NIMH led seven NIH institutes in an initiative to develop new tools to phenotype mouse nervous system functioning and behavior. A large-scale initiative to find genetic mutations in the mouse that influence nervous system functioning and behavior is under development. Both activities will help develop an animal model of complex behavior and neural circuitry that will contribute to our understanding of the etiology and pathogenesis of MDD.

NIMH sponsors several neuroscience research projects examining the impact of variations in the quality and quantity of early maternal care as a risk factor for the development of neurochemical, hormonal, and behavioral disorders in adulthood. Results of these studies, which are being conducted in several species and across a range of genetic backgrounds, will help unravel the interaction of genes and environment in determining risks for mental disorders.

NIMH supports multiple clinical research projects using functional brain imaging approaches to better understand the neurobiology and treatment of major depressive disorder in adolescent, adult, and geriatric patients. Functional imaging studies will yield new insights into understanding the therapeutic effects of antidepressant treatments and offer a new strategy for assessing and treating negative mood states in depression and other disorders.

Among NIMH-funded research examining the effects of psychotropic medications in children and adolescents are studies of fluoxetine in anxious children, risperidone in adolescents with schizophrenia, and lithium and valproate in adolescents with bipolar illness. A pilot study of St. John's wort in young people with depression is also in progress. In addition, NIMH funds the Research Units on Pediatric Psychopharmacology, a network of research sites devoted to testing the efficacy, effectiveness and safety of commonly used medications in children and adolescents. In 2000, NIMH plans to focus on developing studies of the long-term safety of medications in children and adolescents.

NIMH supports controlled studies of the effects of both medication treatment and psychotherapy for youths with depressive disorder. Separate studies have shown that certain antidepressant medications, such as fluoxetine, and specific psychotherapies, such as behavioral and interpersonal therapy, are efficacious treatments for depressed youths. NIMH currently is funding a multi-site trial coordinated by researchers at Duke University and conducted at 9 clinical sites across the country to compare the relative effectiveness of medication treatment, cognitive-behavioral therapy, and the combination of these two interventions in treating adolescents with major depression.

NIMH recently awarded a \$26.9 million, 5-year contract to A. John Rush, M.D. and colleagues, of the University of Texas Southwestern Medical Center, to study the effectiveness of varying treatment strategies for treatment-resistant depression in adults, a major public health problem. Beginning with 4,000 patients from a wide range of clinical practice settings, 2,000 of whom are expected to display initial treatment resistance, the research will determine the degree to which differing treatment sequences are acceptable to patients, reduce their symptoms and improve their work performance and other social function, while also minimizing side effects and leading to high patient satisfaction, and will begin to define the costs and cost offsets of such care. The University of Texas team will coordinate collaborating researchers at Massachusetts General Hospital, Columbia University, the University of Pittsburgh and 8-10 additional regional sites providing demographic and geographic diversity, so that the findings will have broad applicability. Patient recruitment for the trials is expected to begin in Fall 2000.

Item

Gambling Addiction - ... The Committee encourages NIMH to continue to express this interest in funding such high quality research, especially in the areas identified by the [National Gambling Impact Study] Commission, and to consider including other relevant Institutes through all available mechanisms, as appropriate, including reissuing the program announcement and supplementing existing research grants. The Committee is pleased to learn that NIMH will award a grant for the first treatment intervention study of pathological gambling, and urges the Institute to consider encouraging additional applications for treatment outcome studies. (p.105)

Action taken or to be taken

In September 1998, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the National Institute on Drug Abuse (NIDA) joined NIMH in a Program Announcement (PA) to encourage research grant applications concerning pathological gambling. This PA provided a special receipt date in November and special scientific review group for at least three years. The first year's response (in November 1998) of 24 applications was larger in number and stronger than anticipated (the National Academy of Science panel on pathological gambling identified about 300 studies that met contemporary standards of scientific quality). Of these applications, about a half dozen had the clear potential for obtaining high ratings of scientific merit with more work and resubmissions that responded to the concerns of the scientific reviewers. All of these applicants have resubmitted recently. One of the applications submitted under the PA was funded in September in collaboration with the NIH Office for Research on Women's Health to develop a treatment to help the wives of pathological gambling cope more effectively with their spouse's gambling and thereby to prevent or reduce the adverse effects on the women, e.g., stress, depression and attempted suicide.

In October 1999, NIMH, NIAAA, and NIDA expanded the PA on pathological gambling to encourage grant applications that were responsive to research recommendations of the National Gambling Impact Study Commission, relevant to the NIH, and within the program scope of the collaborating institutes. The addendum notice encouraged potential applicants to consider seeking research grant support using the entire range of research grant mechanisms and through submissions for regular receipt dates and assessment of scientific merit by regular review committees; two gambling research grant applications that were submitted for regular receipt dates and regular reviews were funded in FY 1999. One was for a treatment outcome study. The other was for research training and dissertation research to develop a better understanding of gamblers. As recommended by the Commission, NIMH is exploring the addition of gambling components of high scientific merit to existing surveys and longitudinal studies. The National Comorbidity Study will include a gambling component to illuminate the relation of gambling to other mental disorders.

Item

Manic-depression Illness - ...The Committee commends NIMH for moving forward with its current research plan for manic depression and urges the Institute to expand its research for new treatments through all available mechanisms, as appropriate, including clinical trials. (p. 105)

Action taken or to be taken

Enrollment has begun in the NIMH-initiated clinical trial aimed at improving the effectiveness of treatment for bipolar disorder. The project will enroll 5,000 subjects in 20 sites around the U.S. in order to address important public health issues around treatment strategies for different phases and manifestations of the illness. Symptomatic, functional, and economic outcomes of various treatment strategies will be examined.

The NIMH Intramural Research Program has selected and is in the final stages of bringing on board a nationally renowned researcher who will head a major new intramural program in anxiety and mood disorders, including manic-depressive illness.

Item

Schizophrenia - ...The Committee, urges NIMH to continue basic and clinical research opportunities that will advance both the understanding and treatment of this most disabling of mental illnesses. (p.105)

Action taken or to be taken

A new Clinical Neurosciences Research Branch was recently created as part of NIMH's Division of Neuroscience and Basic Behavioral Science. The primary goal of this branch is to further translational research, i.e., research that seeks to "translate" knowledge back and forth between basic biology and clinical research. The aim of these efforts is to elucidate the etiology and pathophysiology of the major mental disorders. A significant part of this undertaking is the Silvio O. Conte Centers for the Neuroscience of Mental Disorders-multi-disciplinary, integrated research programs with precisely this goal. Of five currently funded Conte Centers, two are focused on schizophrenia.

Pending a full understanding of the causes of schizophrenia, one of NIMH's highest priorities is to improve the lives of people with this disorder. In 1999, NIMH awarded a \$42 million contract to the University of North Carolina to initiate and coordinate a large scale multi-center randomized clinical trial of newly developed antipsychotic drugs. These drugs have received FDA approval (and thus are known to be efficacious in treating acute psychosis in schizophrenia), yet their effectiveness in long term treatment and how best to utilize them in real life clinical settings remains to be determined. NIMH also is funding multi-million dollar, investigator-initiated clinical trials to study treatment of recent onset schizophrenia, to improve vocational outcomes, and to develop novel treatments for negative symptoms. Finally, the NIMH has launched a new initiative to support research into early detection and prevention of schizophrenia.

FY 2000 Senate Appropriations Committee Report Language (S. Rpt. 106-166)

Item

Alzheimer's Disease - ...NIMH is urged to continue its close collaboration with the National Institute of Aging and the National Institute of Neurological Disorders and Stroke, and to expand its investment in research on Alzheimer's disease (p.161)

Action taken or to be taken

Please reference page NIMH-30 of this document for NIMH's response to the Significant Item on Alzheimer's disease.

Item

Women and Mental Health - ...The Committee urges the Institute to identify and examine the critical barriers to the utilization of vital preventive health and mental health services. In addition, the Committee encourages the Institute to develop and evaluate behavioral interventions for health promotion and disease prevention among minority women and girls. (p.161)

Action taken or to be taken

In the recent past, NIMH has funded several studies to identify and examine critical barriers to utilization of health and mental health services for women. These include studies of: barriers to physicians' recognition of domestic violence and barriers in women to disclosure of violence; the impact of psychiatric illness on use of health services for prenatal and postnatal care; and the impact of variations in a public health care system on help seeking for mental health services among low-income Hispanic women. Other research is focusing on the development of new behavioral interventions. One study looks at the effectiveness of depression treatment strategies for low-income public sector gynecology patients, and another looks at the effects of modifications in efficacious treatments for mood, anxiety and eating disorders for women in different settings. In 1999, NIMH initiated a program on the interface of health, mental health and behavioral science research and on interventions to promote behavior change. This focus complements an already strong focus on behavior change and prevention strategies to reduce the spread of HIV and other sexually transmitted diseases in women.

In recognition of the importance of services and intervention development research focused on women and girls, the NIMH has identified as top priorities for 2000, research to reduce disparities in mental health outcomes of women and ethnic minorities and research linking behavioral science more closely with public health problems. In the near future, a work group convened by the NIMH will issue a set of recommendations for other ways to strengthen linkages between behavioral science and public health issues, including those related to women.

Item

Social Work Research and Development - ...The Committee remains very supportive of NIMH's efforts to develop a cadre of Native Hawaiian mental health researchers, utilizing the expertise of their senior mentors. Native Hawaiians have historically experienced a disproportionate incidence of various mental health problems, including depression. In order to effectively address these issues in the long run, NIMH should establish a Native Hawaiian center of excellence in mental health. (p.161)

Action taken or to be taken

There are five social work research development center grant applications under review in Fiscal Year 2000. The NIMH will consider those Center grant applications deemed to be of the highest quality for funding this fiscal year. NIMH staff will continue working with researchers at the University of Hawaii to establish a center of excellence addressing the mental health needs of Native Hawaiians.

Item

Emergency Medical Services - The Committee encourages NIMH to enhance its support of EMSC-related projects and to continue to work with HRSA in educational programs on EMSC such as national conferences. (p.162)

Action taken or to be taken

The NIMH co-sponsors an annual conference with Health Resources and Services Administration (HRSA) on emergency medical services for children. In addition, the NIMH is a co-sponsor with HRSA, Center for Disease Control and Prevention (CDC) and Agency for Healthcare Research and Quality (AHRQ) of the joint research program announcement on Emergency Medical Services for Children.

Item

[Suicide] - ... The Committee understands there is a need for NIMH research examining the extent to which improving the abilities of primary health care providers to recognize and treat major depression will prevent suicides among the nation's rapidly growing elderly population. The Committee is encouraged that NIMH, SAMHSA, HRSA, and the VA are collaborating on efforts to improve the tools and methods used for assessing suicidal behavior in evaluations that these agencies are conducting of approaches to treating later life mental and substance abuse disorders in primary care settings. (p.162)

Action taken or to be taken

NIMH let professional service contracts to develop reviews of measures of suicidal behavior for youth and adults and older adults. Draft versions of these reviews have been received by NIMH staff and will soon be made available to the research community, and in particular, to the NIMH clinical trials contractors. These reviews highlight whether instruments are predictive of later suicidal behavior, are sensitive to change in suicidal behavior in treatment studies, and whether they are valid for ethnic minority groups. A second set of professional service contracts is being used to develop ethical and safety guidelines for consent and crisis/safety protocols for studies involving suicidal persons. These guidelines will be reviewed by the Office of Protection from Research Risks, and then made available to the research community.

The NIMH PROSPECT (**P**revention **O**f Suicide in **P**rimary care **E**lderly: **C**ollaborative **T**rial) is currently testing a model of enhanced primary care designed to improve detection and treatment for late life depression in over 1,200 patients. The study will test whether improved treatment of depression decreases suicidal ideation and hopelessness that are precursors of attempted and completed suicide. Several of the investigators of the PROSPECT study are collaborators with the SAMHSA/HRSA/VA Aging, Mental Health, Substance Abuse, and Primary Care Program. These investigators, along with NIMH staff, worked to see that measures of suicidality were part of ongoing assessment in this multi-agency study of primary care. This will be the largest U.S. based study of depression, alcohol use, and suicidality in older primary care patients. NIMH staff has worked with SAMHSA to develop a meeting designed to review current approaches to treating suicidal behavior in community settings, and also participated in VA continuing education, presenting at the VA Quality Forum on Suicide Prevention this summer.

Item

Depression -The Committee is pleased with NIMH's emphasis on funding clinical research to develop new ways to treat children and adolescents for depression and to adequately test the effectiveness of adult medications being routinely prescribed for children. The Committee also supports NIMH's major clinical research effort in bipolar disorder, and its commitment to assess different treatments and therapies for treatment-resistant depression. (p.162)

Action taken or to be taken

Please reference page NIMH-30 of this document for NIMH's response to the significant item on depression.

Item

Women and Depression - ...The Committee urges NIMH to expand research and therapeutic attention to women with depressive symptoms who do not meet criteria for major depression. The Committee applauds NIMH for its work on postpartum depression and urges the Institute to continue its work, particular on women with a history of depression, prior to pregnancy. (p. 162)

Action taken or to be taken

A focus on functional outcomes associated with depressive symptoms is an emerging area of focus for NIMH. The prevalence by gender of depressive symptoms means that any such research will include more women than men, and, particularly, minority and low income women who may be more impaired than other women who meet criteria for depressive disorders. In the recent past, NIMH has funded studies to examine the impact of psychiatric illness on use of health services for prenatal and postnatal care and the impact of variations in a public health care system on help seeking for mental health services among low-income Hispanic women. Other research is focusing on the development of new behavioral interventions. One study looks at the effectiveness of depression treatment strategies for low-income public sector gynecology patients, and another looks at the effects of modifications in efficacious treatments for mood, anxiety and eating disorders for women in different settings.

Item

[Autism] - The Committee recognizes that research into the genetics of autism is being supported by several Institutes at the NIH. Given the difficulty of recruiting multiplex families, the Committee urges that researchers be strongly encouraged to collaborate and share this important resource and notes that a collaborative autism gene bank is already in existence, the autism genetic resource exchange. To that end, the Committee is encouraged by the efforts of the NIMH to combine data sets and urges that all Institutes conducting autism research to participate in that endeavor. (p. 163)

Action taken or to be taken

With regard to the efforts of NIMH in the area of autism genetics, the NIMH is vigorously continuing its efforts to sustain and expand its genetics repository, with its emphasis on public availability and cooperation. New research efforts that will utilize the repository were funded in FY 1999 and FY 2000 should see an expansion in the number of samples catalogued and widely available to interested investigators.

Item

[Autism] - ...The Committee encourages the interagency autism coordinating committee to continue to meet regularly and requests that the Director be prepared to report to Congress on the goals set and progress made regarding autism research during the fiscal year 2001 hearings. (p. 163)

Action taken or to be taken

The NIH Autism Coordinating Committee which is composed of representative of NIMH, National Institute of Neurological Disorders and Stroke (NINDS), National Institute of Child Health and Human Development (NICHD), National Institute on Deafness and Other Communication Disorders (NIDCD) continues to meet regularly to address a number of relevant issues. The Directors of these four Institutes are regularly involved and kept up to date on programmatic and scientific developments. The Committee has supported a large number of activities, including a recent large, comprehensive meeting on the current state of knowledge relevant to autism treatment.

Item

Diabetes - The Committee urges the Institute to review and implement the recommendations of the Diabetes Research Working Group report. Also, the Institute is encouraged to support research into assisting children who suffer from diabetes by developing strategies appropriate for children in maintaining normal blood glucose levels. In addition, the Institute should support research in helping children cope with living with chronic illnesses like diabetes and avoid the depression, risky behavior, and eating disorders that are common side effects of the disease. (p. 164)

Action taken or to be taken

The institute supports research to develop and evaluate age-appropriate interventions for a wide range of co-morbid pediatric mental and medical disorders, symptoms, and related disability. In particular, institute initiatives aim to understand the causes and limit the development of disorders such as depression, anxiety, conduct disorders, and eating disorders that may co-occur with a range of medical disorders in children and adolescents.

Item

Gambling - The Committee recently held a hearing and received testimony regarding gambling from scientist, members of the public, and members of the National Gambling Impact Study Commissions. In the Commission's final report, recommendations were made calling for additional support of investigator-initiated peer-reviewed research that would lead to a better understanding of the underlying mechanisms involved in pathological gambling behavior. The Committee is aware that the National Institute of Mental Health (NIMH) has issued a program announcement to encourage research grant applications in this area, and encourages NIMH to reissue this announcement to permit funds to be used to supplement existing research grants to support peer-reviewed research, especially in the areas identified by the Commission. The Committee further encourages collaboration with other NIH institutes. (p. 164)

Action taken or to be taken

In September 1998, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the National Institute on Drug Abuse (NIDA) joined NIMH in a Program Announcement (PA) to encourage research grant applications concerning pathological gambling. This PA provided a special receipt date in November and special scientific review group for at least three years. The first year's response (in November 1998) of 24 applications was larger in number and stronger than anticipated. Of these applications, about a half dozen had the clear potential for obtaining high ratings of scientific merit with more work and resubmissions that responded to the concerns of the scientific reviewers. All of these applicants have resubmitted recently. One of the applications submitted under the PA was funded in September in collaboration with the NIH Office for Research on Women's Health to develop a treatment to help the wives of pathological gambling cope more effectively with their spouse's gambling and thereby to prevent or reduce the adverse effects on the women, e.g., stress, depression and attempted suicide.

Item

Youth Violence - The Committee is deeply concerned about the recent wave of school shootings across the country, and believes that the NIH has an important role to play in helping policy makers understand and respond to the causes of such violent antisocial behavior. The Committee encourages NIMH as well as other institutes to increase support for behavioral research relating to violence, and to provide ways to better understand how to apply the knowledge from this research when designing effective treatment and prevention programs. (p. 164)

Action taken or to be taken

NIMH has a long history of support for research and research training on violence and traumatic stress. NIMH-supported research has generated information needed to identify, treat, and prevent the causes and consequences of violent behavior. As part of this continuing research commitment, NIMH is currently moving the field toward developing and testing innovative, evidence-based prevention and treatment programs, including:

- NIMH has been involved with the research community in a two-year effort to take stock of the field, identify gaps in our knowledge, and foster the development and testing of research driven intervention strategies. A completed draft of this report is being circulated to the field for comment.
- In collaboration with other NIH Institutes, NIMH and the NIH Office of Behavioral and Social Science Research (OBSSR) recently convened an expert panel to assess new opportunities for NIH-supported research on violence. This expert panel examined the outcomes of several previous conferences, working groups, and reports on this topic; reviewed prior research recommendations; assessed progress in critical areas of need; and suggested areas for future NIH research. Panel members also explored the feasibility of research on the effectiveness of combining individual-level interventions with community-level interventions, building on the success of other public health behavior change interventions (e.g., smoking reduction and HIV risk reduction). An imminent report of the panel proceedings will form the basis for expanded intervention research in this area.
- In FY 2000, NIMH will issue Requests for Applications (RFAs) in the area of youth violence, with particular emphasis on understanding the role of co-occurring mental health problems such as Attention Deficit Hyperactivity Disorder and Depression. An RFA in collaboration with CDC is also planned in order to foster dissemination of evidence based youth violence prevention and early intervention strategies, and to examine critical issues such as how well these interventions work in diverse community settings, which components are critical to achieving positive outcomes, and cost effectiveness. NIMH also plans to release a revised PA in the area of Violence and Traumatic Stress, with an expanded emphasis on intervention development and testing.
- NIMH has been involved in interagency efforts involving the Departments of Health and Human Services, Education, and Justice, and the National Science Foundation in order to identify areas of potential research collaboration, particularly in the area of prevention and early intervention research.

Item

Fragile X - ...Individuals with fragile X constitute a remarkably homogeneous study population for advancing our understanding of these disorders. Recent years have seen a convergence of research in psychiatry and molecular biology which are now beginning to help researchers understand the biological basis of human behavior and intelligence, as well as mental illness, on an increasingly more detailed level. Yet very few studies have utilized the most recent and advanced psychiatric research techniques to examine fragile X. The Committee urges the NIMH to promote increased awareness of this disorder among psychiatrists who treat adults with fragile X for the psychiatric manifestations of this disease. NIMH is also encouraged to promote rigorous scientific study of the currently available treatments commonly employed in fragile X patients, and to investigate promising new psychopharmacologic interventions. (p. 164)

Action taken or to be taken

The NIMH supports research on the biological bases of psychiatric aspects of fragile X syndrome. Several NIMH-supported Research Units in Pediatric Psychopharmacology have contracts to conduct clinical drug trials on a range of developmental neuropsychiatric disorders, including

fragile X and autism, a syndrome with an association with fragile X. The Institute currently funds clinical trials of both psychosocial and pharmacological treatments for children and adolescents with autistic disorder. These protocols for children with autism also include patients with fragile X, as long as they meet diagnostic criteria for autistic disorder. NIMH will continue to welcome grant applications in the areas of treatments, both behavioral and pharmacologic, for a wide range of developmental neuropsychiatric disorders, including fragile X syndrome.

Item

Learning Disabilities - The Committee commends NIMH for the work conducted to explore the neurological and behavioral aspects of learning disabilities. The Committee looks forward to learning the results of this work and encourages the Institute to continue to coordinate with other Institutes to work on related activities. (p. 165)

Action taken or to be taken

NIMH is planning to develop new initiatives, in concert with other institutes, to extend the findings of basic research on attention regulation and emotional regulation systems to issues of early identification, prevention and treatment of children whose problems in these areas are often associated with learning deficits. In addition, an expanded research emphasis will be placed on service use, practitioner behavior, professional training and dissemination of efficacious interventions for children with problems related to cognitive and attentional systems.

NATIONAL INSTITUTES OF HEALTH

National Institute of Mental Health

Program Administration

Authorizing Legislation

	PHS Act/ Other Citation	U.S. Code Citation	2000 Amount Authorized	2000 Estimate	2001 Amount Authorized	2001 Budget Estimate
Research and Investigation	Section 301	42§241	Indefinite		Indefinite	
				> \$800,461,000		> \$849,553,000
National Institute of Mental Health						
	Section 464 R et seq.	42§285	Indefinite		Indefinite	
National Research Service Awards	Section 487(d)	42§288	a/	45,515,000	b/	46,506,000
Total, Budget Authority				845,976,000		896,059,000

a/ Funding provided under the Departments of Labor, Health and Human Services, Education, and Related Agencies Appropriations Act, 2000 (P.L. 106-113).

b/ Reauthorizing legislation will be submitted.

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health
Program Administration

Appropriation History

Fiscal Year	Budget Estimate to Congress	House Allowance	Senate Allowance	Appropriation	1/
1993	n/a	n/a	\$574,803,000	583,561,000	2/
1994	576,015,000	613,444,000	613,444,000	613,444,000	
1995 3/	545,223,000	541,687,000	543,687,000	542,989,000	4/
Rescission				(789,000)	
1996	558,580,000	661,328,000	550,632,000 3/	661,328,000	
Rescission				(706,000)	
1997 3/	578,149,000	701,247,000	589,187,000 3/	701,107,000	5/
1998 3/	629,739,000	744,235,000	759,956,000	750,241,000	
1999 3/ 6/	699,679,000	815,707,000	861,208,000	861,208,000	
Rescission				(570,000)	
2000 3/	758,892,000	930,436,000	969,494,000	978,360,000	
Rescission				(5,214,000)	
2001 3/	896,059,000				

Not Applicable

- 1/ Reflects enacted supplements, rescissions, and reappropriations. Prior to the FY 1993 Senate Allowance, NIMH was a component of the ADAMHA appropriation.
- 2/ Excludes enacted administrative reductions of \$4,723,000, \$81,000, and \$1,981,000.
- 3/ Excludes funds for HIV/AIDS research activities consolidated in the NIH Office of AIDS Research.
- 4/ Excludes enacted administrative reduction \$561,000.
- 5/ Excludes enacted administrative reduction \$478,000.
- 6/ Reflects a decrease \$2,111,000 for the budget amended for bioterrorism.

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health

Detail of Full-Time Equivalent Employment (FTE)

OFFICE/DIVISION	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate
Office of the Director	133	134	134
Division of Neuroscience and Basic Behavioral Science	36	46	46
Division of Services and Intervention Research	37	40	40
Division of Mental Disorders, Behavioral Research and AIDS	46	48	48
Division of Extramural Activities	32	29	29
Division of Intramural Research Programs	447	522	522
Total, NIMH	731	819	819
Statutorily-ceiling exempt FTEs not included above			
	(3)	(3)	(3)
Funds to support these FTEs are provided by Cooperative Research and Development Agreements			
FISCAL YEAR	Average GM/GS Grade		
1997	10.2		
1998	10.4		
1999	10.6		
2000	10.6		
2001	10.6		

Note: Includes FTEs associated with HIV/AIDS research activities. Funds to support these FTEs are included in the Office of AIDS Research.

NATIONAL INSTITUTES OF HEALTH
National Institute of Mental Health
Program Administration
Detail of Positions

GRADE	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate
ES-6	2	2	2
ES-5	2	2	2
ES-4	8	10	11
ES-3	4	3	2
ES-2	0	0	0
ES-1	0	0	0
Subtotal	16	17	17
Total - ES Salary	\$1,994,056	\$2,199,900	\$2,213,400
GM/GS-15	64	71	71
GM/GS-14	70	78	78
GM/GS-13	54	60	60
GS-12	69	77	77
GS-11	84	93	93
GS-10	1	1	1
GS-9	58	64	64
GS-8	55	61	61
GS-7	72	80	80
GS-6	20	22	22
GS-5	10	11	11
GS-4	19	21	21
GS-3	2	2	2
GS-2	1	1	1
GS-1	0	0	0
Subtotal	579	642	642
Grades established by Act of July 1, 1944 (42 U.S.C. 207):			
Assistant Surgeon General	1	0	0
Director Grade	20	19	19
Senior Grade	7	7	7
Full Grade	2	2	2
Senior Assistant Grade	0	0	0
Assistant Grade	0	0	0
Co-Step	0	0	0
Subtotal	30	28	28
Ungraded	105	130	130
Total permanent positions	592	663	663
Total positions, end of year	730	817	817
Total full-time equivalent (FTE) employment, end of year	731	819	819
Average ES level	ES-4	ES-4	ES-4
Average ES salary	\$124,629	\$129,356	\$130,200
Average GM/GS grade	10.6	10.6	10.6
Average GM/GS salary	\$53,406	\$58,090	\$60,239